PSCC

STATE OF ARIZONA
PUBLIC SAFETY COMMUNICATIONS COMMISSION

DRAFT

STATEWIDE COMMUNICATIONS INTEROPERABILITY PLAN

September 27, 2007

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RECORD OF CHANGE

Change Number	Date	Description	Change Date	Signature

EXECUTIVE OVERVIEW

This *Arizona Statewide Communications Interoperability Plan* (SCIP) serves as a reference for all public safety officials by describing the status of statewide interoperable communications within the state and documenting the specific goals and objectives the state has established to improve public safety communications. To ensure this plan has the support of all levels of government, the Public Safety Communications Commission (PSCC) through its working group, the Statewide Interoperability Executive Committee (SIEC), convened a series of regional forums in which it sought the opinions and counsel of all participating levels of government and concerned non-governmental entities to produce the statewide interoperability plan to be used by all first and initial responders in Arizona.

Arizona is a magnificent state, with beautiful landscapes and vistas and special needs and requirements. This SCIP will describe the state, special challenges and opportunities and how the PSCC and SIEC came together to develop this statewide plan.

Arizona is the sixth-largest state in the United States and shares its southern border with Mexico. Additionally, it borders New Mexico, Utah, Nevada and California. Federal or tribal governments own more than 50 million of the over 72 million acres of land in the State. Each state and Mexico have interoperability agreements with Arizona that enable interoperable communications when required.

Because of its unforgiving desert environment, Arizona's critical infrastructure is largely in support of the state's water supply. Other critical infrastructure supports tourism, the number one state industry. This infrastructure includes communications, banking, energy and, of course, emergency services.

This is the first of what Arizona intends to be several coordinated blueprint planning efforts that will provide the opportunity for all levels of government to come together and consolidate their communications needs, based on risk-benefit models projecting evolving future requirements. This collaboration will provide a mechanism for governments to resolve shared issues and assess future common needs. As the process matures, enhanced versions of this plan will include new objectives and possibilities for the future. All governments (state, local, tribal, and federal) and applicable non-governmental entities should accelerate collaborative efforts with a single focus on embracing and maintaining the statewide interoperability plan to ensure the state implements sustainable team-based solutions with measurable outcomes in cost-effective and highly productive, timely ways, each achieving a

better, more efficient means of communications interoperability.

The Arizona SCIP is based on the *Office for Interoperability and Compatibility U.S. Department of Homeland Security Statewide Interoperability Planning Guidebook* (May 2007) criteria. This guide and its criteria help define an actionable way for first responders and their leadership to use interoperability to improve public safety response effectiveness and safety for responders and citizens in emergencies.

Throughout this document, the SAFECOM Interoperability Continuum was used as a guide to provide a clear and concise method to determine levels of interoperability, governance, and technology.

Using this process, Arizona has outlined its key components for interoperability as follows.

The long-range goal for the state is to create a statewide fully interoperable radio system. The components will include a 700 Megahertz (MHz) Project 25 standards-based system, and a high-level network connection to regional and existing systems. The state anticipates that many local and tribal entities will desire to partner with them on the 700 MHz component of this system. This anticipation be based upon the needs of local and tribal governments to expand their coverage, and their needs to migrate from wideband technology to narrowband technology pursuant to the Federal Communications Commission's mandate to do so by 2013.

As this system is in its infancy, a short-term goal for the state is to complete deploying a statewide suite of interoperable radios (Ultra High Frequency (UHF,) Very High Frequency (VHF,) and 800 MHz) that can be used by any emergency responder whose organization subscribes via a signed Memorandum of Understanding (MOU). This suite of interoperable radios, known as the Arizona Interagency Radio System (AIRS) will remain in place in Arizona long after the 700 MHz component of the statewide interoperability solution is deployed as there will always be a need for AIRS as external responders deploy into Arizona through mutual aid programs in support of the Arizona response effort.

To make the 700 MHz radio system operational and to assist AIRS, an updated microwave radio system is required. This microwave system implementation is under way and will be completed over a ten-year period.

To aid local governments preparing to join the 700 MHz component of the statewide interoperability solution, the state is requesting that local governments upgrade their 800 MHz radio systems so that when the statewide 700 MHz radios are deployed, each agency will be

able to connect with the other participating agencies[1].

To ensure the state's investment in 700 MHz technology is successful, the state is urging local entities to prepare their existing systems to enable connectivity to and compatibility with the new network by establishing appropriate minimum specifications for equipment purchased with grant funding.

There will always be the need for short-term, immediate assistance for those entities who choose not to join the state system. Clearly, the idea of joining a statewide system is new for the public safety community; there are unknown cost factors, such as loss of control of a core business requirement for some, as well as a lack of compatibility for partner agencies who may not share state system's spectrum. Arizona will be developing a system of other interconnectivity devices to enable local governments choosing to remain with their own radio systems to do so but still be able to connect with the state system.

The SAFECOM program recommends using its Communications Interoperability Continuum (Continuum) as a tool to help the emergency response community and policy-makers measure, analyze and address critical elements required for success as they plan and implement their short- and long-term interoperability efforts. The Arizona SCIP is based on the SAFECOM methodology. The Continuum depicts interoperability's core facets according to the stated needs and challenges of the emergency response community. The interoperability elements defined in the Continuum[2] include governance, Standard Operating Procedures (SOPs), technology, training, exercises, and usage.

While much has been done, there remains much to do in Arizona to realize interoperability. The SCIP sustains the momentum created by the PSCC and SIEC planning efforts by maintaining long-standing local and regional planning within the statewide process. The state is completing work on a statewide interoperability system that will bring the first phase of improved communications to most Arizonians within two years. Additionally, the state is working on completing its statewide microwave radio system upgrade to enable additional applications on the state system. The state is currently deploying a statewide 700 MHz radio system as a component of its statewide interoperability solution that will connect all state

[1] Newer 800 MHz technology works on both the 700 and 800 MHz public safety radio bands.

[2] http://www.mshp.dps.mo.gov/MSHPWeb/PatrolDivisions/COMM/SAFECOMInteroperabilityBrochure.pdf

agencies and any local, tribal, federal or authorized non-governmental entities who desire access to a modern communications system. The first phase of this system is a demonstration project to be completed in 2008. Governor Janet Napolitano has set a goal for Arizona to have 85% of the state's population covered by interoperable communications systems within two years. The plan described in this document will achieve this goal, but because the state has significant areas with little population, a strategic technology reserve will be instrumental in bringing communications to those areas that are underserved today and will remain so for the foreseeable future. Refer to Section 5.4 of this document for detailed project descriptions. This document also identifies interoperability gaps and assists the state in identifying strategies to reduce the gaps in a collaborative and timely manner. As the state plans for the future, there will always be a need for a strategic technology reserve in Arizona.

Interoperability planning extends well beyond the state levels of authority. Interoperable communications is now necessary with bordering states and countries; Arizona currently has an agreement in place with Sonora, Mexico as well as its bordering states. These agreements are discussed in Section 5.4. Planned statewide interoperability must be established at the local government level and progress upward, synchronizing partnerships along the way. Through the PSCC, the SIEC, and this plan, local participation is encouraged and is integral to the state's strategic planning process. Every effort will be made to gain full participation within the state.

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1.3 Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular discipline and should not have to balance the coordinator duties with other responsibilities.	2.3
1.4 Describe the communications and interoperability environment of the current emergency response effort.	4.0
1.5 Include a problem definition and possible solutions that addresses the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum.	4.0.6
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2.1 Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state.	5
2.2 Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries.	5.4
2.3 Provide a strategic plan for addressing data interoperability in addition to voice interoperability.	5.4
2.4 Describe a strategy for addressing catastrophic loss of communications assets by developing redundancies in the communications plan.	5.4
2.5 Describe how the plan is, or will become compliant with the National Incident Management System (NIMS) and the National Response Plan.	5.5
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3.2 Define the processes for continuing to have local input and for building local support of the plan.	3.2

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5. Technology	
5.1 Include a statewide capabilities assessment (or a plan for one) which includes, official communications equipment and related interoperability issues. At a minimum, this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately, more detailed information will be required to complete the documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment.	4.0
5.2 Describe plans for continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies.	4.2
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10.3 Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives.	5.7.1
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10.6 Identify a POC responsible for implementing the plan.	6.4
10.7 Describe critical success factors for implementation of the plan.	6.3
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11.1 Describe how public safety agencies will plan and coordinate, acquire, deploy and train on interoperable communications equipment, software and systems that: 1) utilize reallocated public safety - the public safety spectrum in the 700 MHz frequency band; 2) enable operability with communication systems that can utilize reallocated public safety spectrum for radio communications; or 3) otherwise improve or advance the interoperability of public safety communications system that utilize other public safety spectrum bands.	6.5
11.2 Describe how a strategic technology reserve (STR) will be established and implemented to pre-position or secure interoperable communications in advance for	6.6

immediate deployment in an emergency or major disaster.	
11.3 Describe how local and tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed.	6.7
11.4 Describe how authorized non-governmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed (if applicable).	6.8

TABLE 1 - COMPLIANCE MATRIX

Statewide Communications Interoperability Plan (SCIP)

1.0 INTRODUCTION

Before the Public Safety Communications Commission (PSCC) was established officially, a group of individuals who believed that the state of Arizona should establish interoperability as a statewide priority started meeting as an *ad hoc* community of interest. In April 2000, the governor and the legislature formalized this group and created the PSCC, whose mission is to:

- promote the development and use of standards-based (radio) systems
- capitalize on resource-sharing opportunities
- apply best practices and lessons learned
- provide effective, reliable, and sustainable radio communications among local, county, state, tribal, and federal public safety entities
- build a statewide interoperable emergency communications infrastructure that will improve emergency response times and increased radio coverage to promoted the life and safety of the citizens of Arizona and to protect its critical infrastructure.

The PSCC created the Arizona Statewide Interoperability Executive Committee (SIEC) is a five-member PSCC advisory committee representing a broad cross-section of the state's public safety officials.

In 2006, the PSCC awarded a contract to Federal Engineering, Inc. to work in concert with the PSCC and the SIEC to create a statewide interoperable radio system for public safety agencies throughout Arizona. After reviewing the work of other consulting firms and holding a series of meetings with the PSCC, the decision was made to deploy a 700 MHz standards-based land mobile radio system as part of its overall interoperability solution to be used by all state agencies and made available to local, tribal and federal entities. This statewide radio system will be designed to interoperate with regional radio systems for entities who choose not to join the statewide system. The recommendation to use the 700 MHz band was made in part because the band is currently unused, providing the state a clear-channel migration approach for all users. In addition, there was also a belief that as many local, regional, and tribal entities will be required to rebuild their radio systems because of a Federal Communications Commission (FCC) mandate to "narrowband" their equipment (ensure their radio transmission emissions are within the coherence limitations of their spectrums) by 2013 that joining the statewide radio system would be an attractive alternative to making large investments that would not necessarily improve an agency's radio coverage.

On April 24, 2007, the PSCC voted to adopt the plan. The PSCC accepted the concept of the statewide radio system for state agencies, with the ability for local and tribal agencies to participate by using the statewide system or interfacing their own system to it. This statewide radio system will become the interoperability solution of choice for the state of Arizona.

The SCIP process began with a high-level plan introduced at a SIEC statewide meeting in July 2007. As the state already had a vision for a statewide interoperable communications system, a first draft of the SCIP was prepared prior to the meeting. The meeting was facilitated by representatives of the Interoperable Communications Technical Assistance Program (ICTAP), who also critiqued the plan.

In August 2007, the PSCC contracted with a team of contractors to assist them in developing the SCIP. Data Site Consortium, Inc. is the prime contractor who subcontracted Federal Engineering to assist the PSCC with the SCIP. Science Applications International Corporation (SAIC) was added to the team for quality assurance and technical assistance.

The first meeting with members of the SIEC was held shortly after the plan's introduction to discuss it and obtain additional information from the Committee. An updated plan was sent to ICTAP who then submitted its analysis to the PSCC. Copies of the draft SCIP were placed on a Website and the community of interest was asked to review and comment on the plan.

After the meeting, two additional forums were conducted, one in September and another in October 2007. These public meetings were advertised and open to any interested party. After each meeting, edits to the SCIP were made and placed on the Website to ensure that it was available to the largest audience possible.

This plan represents the PSCC's short-and long-term goals and strategies in designing and implementing its vision. The plan also supports fully Governor Napolitano's vision to provide 85% of the state's population with interoperable communications within the next two years. The SCIP demonstrates Arizona's commitment to its citizens by providing an almost immediate solution to the state's interoperability problem, but also discusses the long-term solution to protect the lives and property of its residents.

2.0 BACKGROUND

This SCIP is a collaborative effort involving the PSCC and SIEC and other interested parties invited to participate in its formulation. The first organizational meeting to discuss SCIP requirements was held in July 2007 with SIEC, PSCC, and ICTAP staff attending. During this meeting, ICTAP explained SCIP requirements and offered the PSCC assistance in reviewing the plan.

On August 15, 2007, a kickoff meeting between the Federal Engineering Project Team and the SCIP team was held in Phoenix, during which PSCC and SIEC shared all available information with the Project Team. After reviewing the information, the team created a *Gap Analysis and Closure Plan* outlining what was required to complete the SCIP.

The project began with assembling all available reports the PSCC and others had completed previously to help understand the effort's status and the steps Arizona had taken to that point. These studies identified the state's needs as well as the needs of local, tribal and non-governmental officials who may use the state's radio system in times of emergency.

The Project Team began interviewing key individuals on August 15, 2007. These interviews were based on questions developed while drafting the *Gap Analysis and Closure Plan* and were posed to obtain accurate and, when applicable, measurable responses.

On August 31, 2007, ICTAP began reviewing the draft plan. ICTAP completed its review on September 14, 2007 and its feedback has been incorporated into the plan.

As the draft of this plan was being reviewed by ICTAP, another draft was presented to the PSCC and the community of interest. This draft (submitted September 11, 2007) was placed on the PSCC website and a message was sent to its ListServ asking for review and comment on the document. SAIC reviewed the September 11 draft and compared its findings to ICTAP's and submitted a report with its suggestions and recommendations.

As a result of the review process described above, this draft of the SCIP is being sent to the U.S. Department of Homeland Security (DHS) on September 28 for review. As the DHS is reviewing this document, it will also also placed on the PSCC Website for additional review and comment.

The next draft of this report will include DHS feedback as well as that from others sending their comments to the PSCC. This draft will be vetted at the October PSCC and SIEC meetings;

additional comments and suggestions will be gathered and the final document is expected to be approved by the PSCC during its November 2007 meeting.

Table 2 below identifies deliverables and milestones for the SCIP.

Deliverables / Milestones	Dates
Project Initiation	August 13, 2007
Work with SIEC and PSCC to determine what information is available from information resources and from ICTAP	August 15, 2007
Deliver required information list to the state	August 17, 2007
Gap Analysis and Closure Plan	August 18, 2007
Draft Plan to PSCC	August 25, 2007
Draft Plan to ICTAP	August 31, 2007
Updated preliminary Plan to PSCC	September 19, 2007
SIEC and PSCC Plan approve draft to DHS	September 25, 2007
Deliver Plan to DHS	December 3, 2007
Teleconference Status Reports	Weekly

TABLE 2- PROJECT TIMELINE

2.0.1 STAKEHOLDERS DRIVING THE STATEWIDE PLANNING INITIATIVE

Throughout this process the PSCC, the SIEC and their constituent groups have been driving the statewide interoperability effort. Through the PSCC's efforts, the planning has flourished.

2.0.2 MOMENTUM DRIVING THIS EFFORT

The impetus for this effort began with the idea that Arizona's safety communications needed to become fully interoperable. To this end, a series of consultants assisted the PSCC in analyzing the issue and concluding independently that a statewide 700 MHz standards-based interoperability network as part of Arizona's overall interoperability solution is the best course of action to provide interoperability for those using the appropriate suite of channels of each of the public safety radio bands. Prior to the Public Safety Interoperability Communications (PSIC) program, the state elected to move forward with a demonstration project demonstrating how a 700 MHz system would create a system enabling interoperability with several of the larger state jurisdictions. Additionally, the Governor announced her desire for the safety agencies serving 85% of the state's population to become interoperable within two years.

Because of the Governor's desire for interoperability within the state, the PSCC's demonstration project is moving forward, the interoperability suite of channels is being made available to all levels of government, creating significant momentum to drive this effort forward.

2.0.3 STATE BENEFITS FROM THIS PLAN

Arizona will realize several benefits from implementing this plan. The direct benefit comes from implementing an interoperable public safety communications system that will enable a much more efficient and coordinated response during crises. A secondary benefit will be through maturing government-to-government interaction through developing MOUs and coordinating plan implementation. Finally, a joint technology investment by the state leveraging federal funds makes sense functionally and financially.

2.1.0 STATE OVERVIEW

2.1.0.1 GEOGRAPHY

The state of Arizona is located in the southwestern United States, is bordered to the south by Mexico, to the east by New Mexico, to the north by Utah, to the north and west by Nevada, and to the west by California. At the northeast corner of the state is "Four Corners," where Colorado is on the opposite corner from Arizona, with New Mexico and Utah in between. Figure 1 is a map of Arizona showing its immediate neighbors.

Arizona measures approximately 400 miles in length, 310 miles in width, and has a total area of roughly 118,000 square miles, making Arizona the sixth largest state in the United States. Arizona has a water area of roughly 364 square miles, making it the third driest state in the U.S. after New Mexico and Wyoming.

Arizona's border with Mexico is 389 miles long and is mostly uninhabited. (The population distribution is discussed below and outlined in Table 5.) Less than 20% of the state is owned by private land owners. There are six international crossing stations along the border (located at Nogales, Douglas, Lukeville, Naco, Sasabe, and San Luis Arizona); due to rugged terrain, however, monitoring illegal activity along the entire international border is currently not cost effective and as a result, illegal border-crossing activities proliferate.

2.1.0.2 DEMOGRAPHICS

The state of Arizona has 15 mostly rural counties, as seen in Figure 2. There are three distinct topographical regions in the state: (1) in the northeast is a high plateau with elevations ranging

from 5,000 to 7,000 feet; (2) in the southeast and northwest is a mountainous region with elevations ranging between 9,000 and 12,000 feet; and (3) the low mountains occupying the southwest portion of the state.

FIGURE 1 - MAP OF ARIZONA

Arizona's population is growing rapidly, with Phoenix being one of the fastest-growing cities in the United States. It is estimated that in 2009 Arizona will be home to 6.8 million people, with the Phoenix metropolitan area having a population of 4.1 million. Table 3 outlines Arizona's population by county and growth projections through 2009. Figure 2 shows the counties' political boundaries.

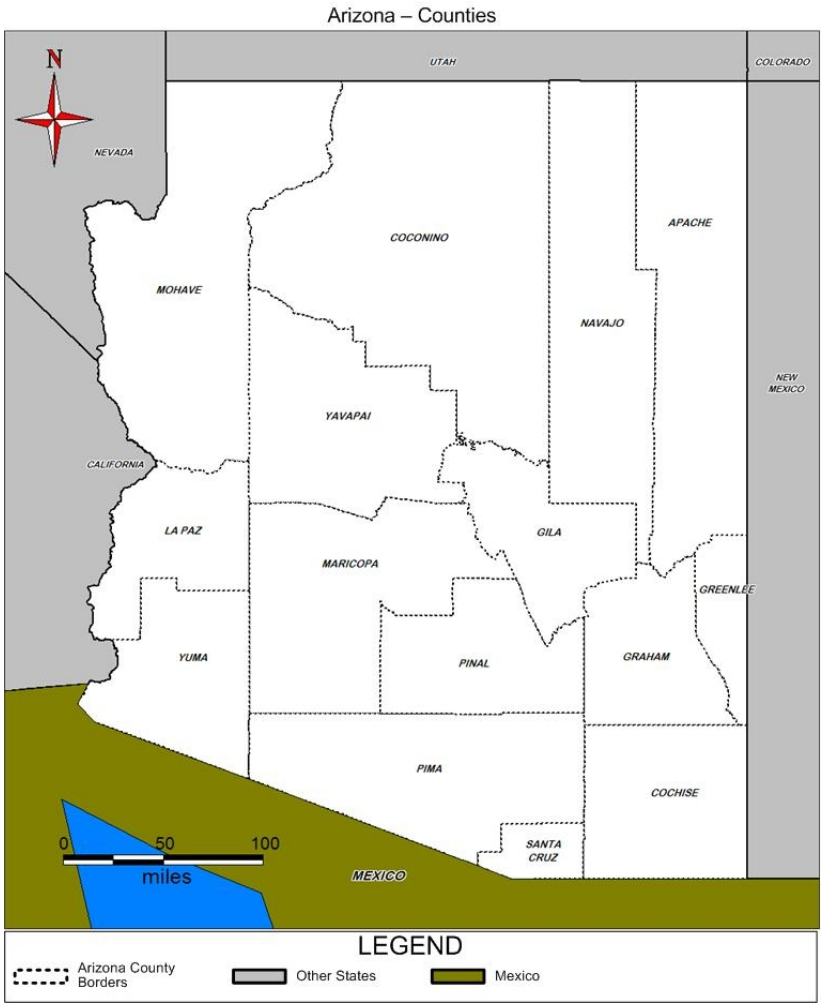

Figure 2- Counties of arizona

Population of Arizona				
Year	2006	2007	2008	2009
Arizona	6,239,482	6,432,007	6,622,885	6,812,137
Apache	74,691	75,597	76,486	77,361
Cochise	134,789	137,708	140,560	143,346
Coconino	132,826	135,070	137,261	139,388
Gila	55,102	55,769	56,427	57,092
Graham	35,873	36,271	36,666	37,054
Greenlee	8,281	8,259	8,238	8,220
La Paz	21,489	21,779	22,062	22,347
Maricopa	3,764,446	3,879,150	3,992,887	4,105,623
Mohave	194,920	201,693	208,372	214,949
Navajo	112,672	115,331	117,971	120,591
Pima	980,977	1,003,918	1,026,506	1,048,796
Pinal	269,892	293,312	316,899	340,660
Santa Cruz	45,303	46,545	47,777	48,998
Yavapai	212,722	220,170	227,468	234,626
Yuma	195,499	201,435	207,305	213,086

TABLE 3 - POPULATION SUMMARY, ARIZONA[3]

As shown in Table 3 (above), Arizona's population is growing rapidly. More than half of the state's population resides in Maricopa County, a designated Urban Area Security Initiative (UASI) area. The state's second UASI area is Pima County, Arizona's second most populated county. In fact, the population of the state's six largest counties accounts for over 85 percent of Arizona's total population. The capital, Phoenix (located in Maricopa County), is one of the largest cities in the United States.

The 2005 census found that 27 percent of the population were under the age of 18 and 13 percent were 65 years of age or older. Arizona continues to grow rapidly as a leading retirement destination for people with communities like Sun City (near Phoenix,) and Green Valley (near Tucson) growing much faster than most cities. As shown in Figure 2, Arizona is

[3] Table taken from the *Arizona Workforce Informer*
http://www.workforce.az.gov/?PAGEID=67&SUBID=138

made up of 15 counties: Mohave, Coconino, Navajo, Apache, Yavapai, Gila, La Paz, Maricopa, Pinal, Graham, Greenlee, Yuma, Pima, Cochise, and Santa Cruz. Figure 3 shows the counties and their major roadways.

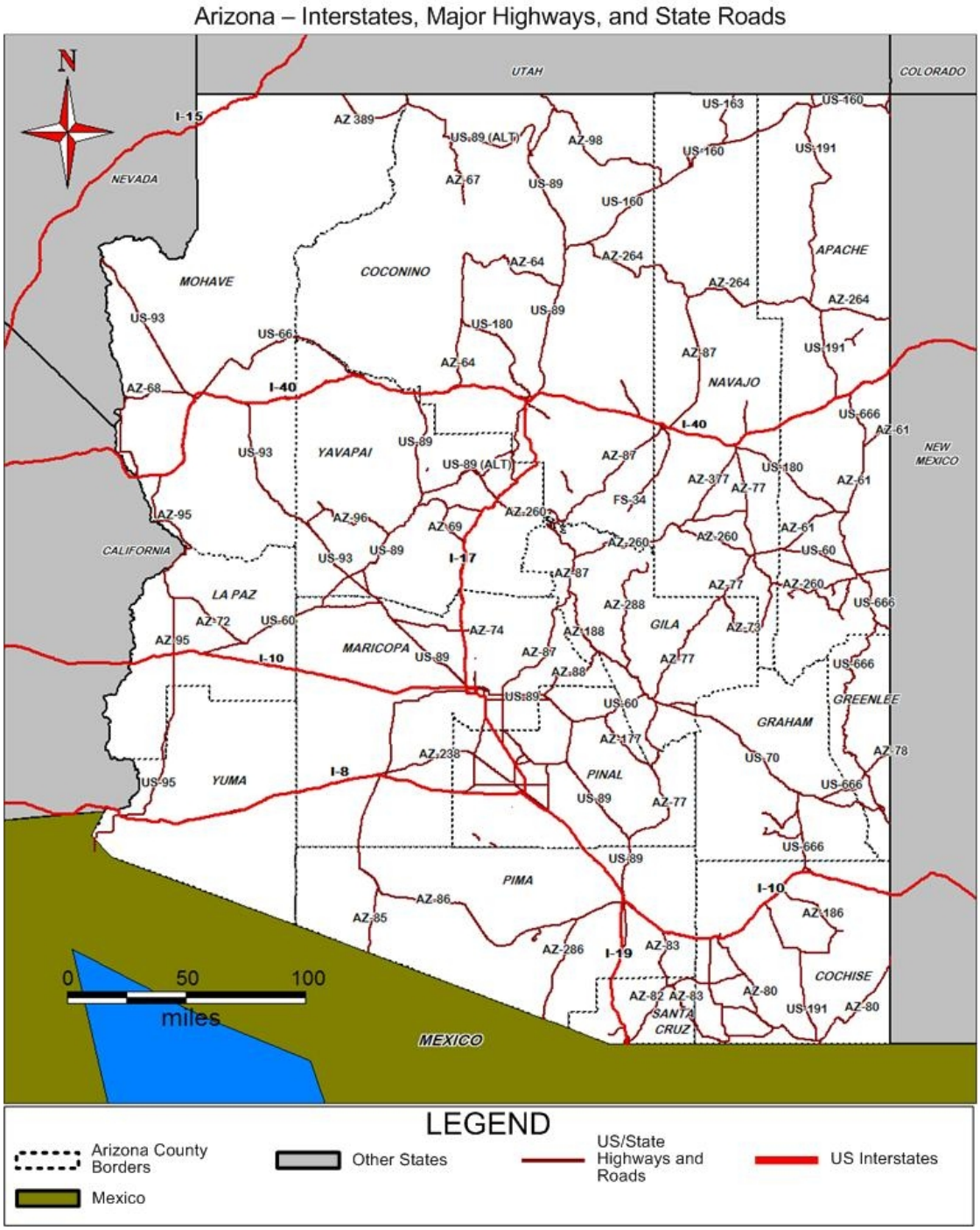

FIGURE 3- ILLUSTRATION OF COUNTY SIZE AND MAJOR ROADWAYS

Tribal Lands in Arizona

Arizona is home to 21 federally recognized tribes (see Table 4). The combined landmass occupied by the tribal nations represents approximately 25% (21 million acres) of the state's land. According to the 2000 federal census, the Native American population in Arizona is over 250,000. The map in Figure 4 displays the locations and size of the Tribal lands in the state.

Federally Recognized Tribes		
Ak-Chin Indian Community	Fort Mojave Indian Tribe	Salt River Pima-Maricopa Indian Community
Yavapai-Apache Nation	Gila River Indian Community	San Carlos Apache Reservation
Navajo Nation	Havasupai Indian Reservation	Tohono O'odham Nation
Cocopah Indian Reservation	Hopi Tribe	Tonto Apache Tribe
Colorado River Indian Tribes	Hualapai Tribe	Yavapai-Prescott Indian Tribe
White Mountain Apache Tribe	Kaibab-Pauite Tribe	Fort Yuma-Quechan Tribe
Fort McDowell Yavapai Nation	Pascua Yaqui Tribe	San Juan Southern Paiute Tribe

TABLE 4 - FEDERALLY RECOGNIZED TRIBES IN ARIZONA

Federal lands

As seen in Figure 4 there is a significant amount of federal land in Arizona. Of the state's total landmass (72,934,622 acres), over 28,723,148 acres are maintained by either the United States Bureau of Land Management, National Forest Service, National Park Service, or Department of Defense.

Among the key national military bases in Arizona are:

- Fort Huachuca, home to the US Army Intelligence Center and School,
- Luke Air Force base, home of the 56th Fighter Wing (the only F-16 Fighter pilot training facility)
- Davis-Monthan Air Force Base, home of the 355th Fighter Wing (whose primary mission is to train A-10 pilots and provide close support and forward air control to ground forces worldwide

- Yuma Proving Grounds

Table 5 identifies the lands in Arizona in acres by ownership:

County	BLM	Forest	Reservation	National Parks	Local/State Park	Military	Other	Private	State Trust	Wildlife	Total
Apache	109,972	491,363	4,795,389	164,087			7,698	940,773	668,900		7,178,182
Cochise	390,904	490,740		17,896		107,354	3,154	1,590,285	1,374,479	2,368	3,977,180
Coconino	605,491	3,243,092	4,552,871	779,691		25,752	10,073	1,587,305	1,125,427		11,929,702
Gila	66,386	1,700,171	1,162,222	1,107			309	105,218	31,220		3,066,633
Graham	733,117	380,693	1,080,785			439	1,036	283,109	496,016		2,975,195
Greelee	160,090	746,981						95,715	172,590		1,175,376
La Paz	1,685,159		232,753		1,621	397,217	1,586	148,608	254,959	169,637	2,891,540
Maricopa	1,631,562	655,026	270,059		100,939	824,639	23,094	1,742,140	649,705	5,056	5,902,220
Mohave	4,777,546	4,694	575,996	1,170,734	4,722	9,967	13,865	1,467,782	565,970	36,097	8,627,373
Navajo	92,960	488,315	4,247,021	22,679			2,565	1,141,423	372,146		6,367,109
Pima	373,786	336,888	2,475,316	411,190	11,191	68,201	7,567	816,920	862,221	514,322	5,877,602
Pinal	374,035	219,017	698,463	2,044	10,527	7,300	43,933	877,256	1,204,930		3,437,505
Santa Cruz	13,518	417,233		9	599		277	298,252	61,597		791,485
Yavapai	605,411	1,984,339	3,101	847	403	257	15,509	1,324,681	1,265,433		5,199,981
Yuma	521,356		7,748			1,411,893	44,160	373,916	191,078	987,328	3,537,479
	12,141,293	11,158,552	20,101,724	2,570,284	130,002	2,853,019	174,826	12,793,383	9,296,671	1,714,808	72,934,562

TABLE 5 - LAND MASS BY GROUP[4]

[4] Arizona State Land Department

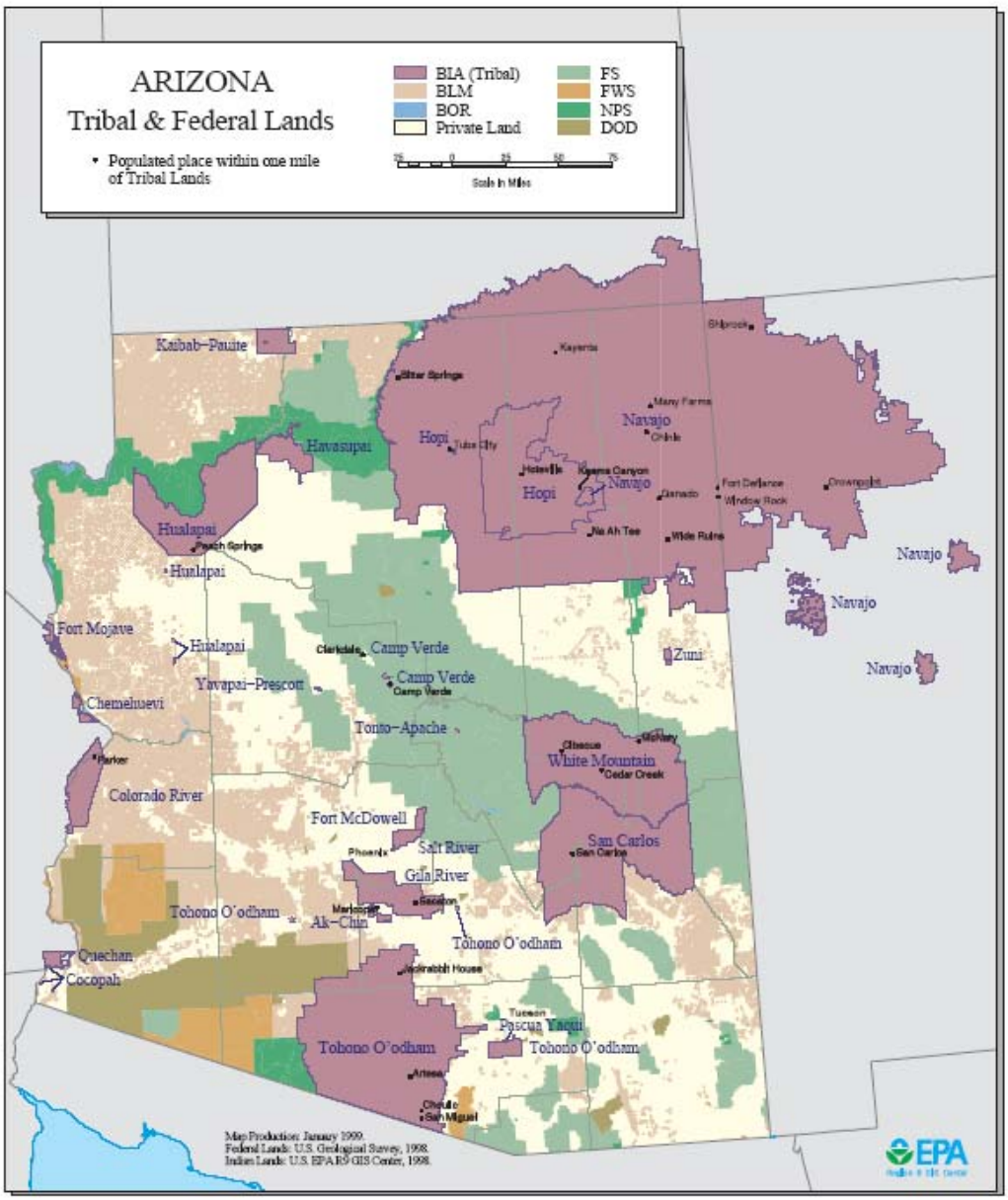

FIGURE 4 - FEDERAL AND TRIBAL LANDS IN ARIZONA[5]

[5] http://www.epa.gov/region9/indian/mapaz.pdf

2.1.0.3 First Responders

Arizona has approximately 281 first responder agencies, with 15 sheriff's departments, 149 police departments, 117 fire districts and emergency medical providers. Arizona currently has 15,225 sworn law enforcement officers with an approximate 4.5 percent yearly increase. Tables 6-9 list emergency response agencies that own and operate their own radio systems. Table 10 compiles information from Tables 6-9 to show spectrum usage within the state's emergency responder agencies.

COUNTY SHERIFF RADIO FREQUENCY BANDS					
COUNTY	VHF	UHF	800	800	800
	CONV	CONV	CONV	TRUNK	P-25
APACHE COUNTY	X				
COCHISE COUNTY	X				
COCONINO COUNTY	X				
GILA COUNTY	X				
GRAHAM COUNTY	X				
GREENLEE COUNTY		X			
LA PAZ COUNTY	X				
MARICOPA COUNTY				X	
MOHAVE COUNTY	X				
NAVAJO COUNTY	X				
PIMA COUNTY				X	
PINAL COUNTY	X				
SANTA CRUZ COUNTY	X				
YAVAPAI COUNTY	X				
YUMA COUNTY					X

TABLE 6 - COUNTY SHERIFF FREQUENCY BANDS

CITY AGENCY FREQUENCY BANDS					
CITY	VHF	UHF	800	800	800
(BY COUNTY)	CONV	CONV	CONV	TRUNK	P-25
APACHE COUNTY					
EAGAR	X				
SPRINGERVILLE	X				
ST. JOHNS	X				
COCHISE COUNTY					
BENSON	X				
BISBEE	X				
DOUGLAS	X				
HUACHUCA CITY		X			
SIERRA VISTA	X				
TOMBSTONE	X				
WILLCOX	X				
COCONINO COUNTY					
FLAGSTAFF	X			X	
FREDONIA	X				
PAGE	X				
SEDONA	X	X			
WILLIAMS	X				
GILA COUNTY					
GLOBE	X				
HAYDEN					
MIAMI	X				
PAYSON	X				
GRAHAM COUNTY					
PIMA	X				
SAFFORD	X				
THATCHER	X				
GREENLEE COUNTY					
CLIFTON	X				

LA PAZ COUNTY						
PARKER	X					
QUARTZSITE	X					

CITY AGENCY FREQUENCY BANDS (Continued)					
CITY	**VHF**	**UHF**	**800**	**800**	**800**
(BY COUNTY)	**CONV**	**CONV**	**CONV**	**TRUNK**	**P-25**
MARICOPA COUNTY					
AVONDALE		X			
BUCKEYE		X			
CHANDLER				X	
EL MIRAGE		X			
GILBERT					X
GLENDALE				X	
GOODYEAR			X		
MESA					X
PARADISE VALLEY		X			
PEORIA		X			
PHOENIX					X
SCOTTSDALE				X	
SURPRISE				X	
TEMPE				X	
TOLLESON			X		
WICKENBURG	X				
YOUNGTOWN		X			
MOHAVE COUNTY					
BULLHEAD CITY	X				
COLORADO CITY	X				
KINGMAN	X				
LAKE HAVASU				X	
NAVAJO COUNTY					
HOLBROOK	X				
PINETOP-LAKESIDE	X				
SHOW LOW	X				
SNOWFLAKE-TAYLOR	X				

WINSLOW	X					
PIMA COUNTY						
MARANA						X
ORO VALLEY					X	
SAHUARITA			X			
SOUTH TUCSON	X					

CITY AGENCY FREQUENCY BANDS (Continued)					
CITY	VHF	UHF	800	800	800
(BY COUNTY)	CONV	CONV	CONV	TRUNK	P-25
PINAL COUNTY					
APACHE JUNCTION	X				
CASA GRANDE	X				
COOLIDGE	X				
ELOY	X				
FLORENCE	X				
KEARNY	X				
MAMMOTH	X				
SUPERIOR	X				
SANTA CRUZ COUNTY					
NOGALES	X				
PATAGONIA	X				
YAVAPAI COUNTY					
CAMP VERDE	X				
CHINO VALLEY	X				
CLARKDALE	X				
COTTONWOOD	X				
JEROME	X				
PRESCOTT	X				
PRESCOTT VALLEY	X				
SEDONA	X	X			
YUMA COUNTY					
SAN LUIS	X				
SOMERTON	X				
WELLTON	X				
YUMA				X	
TOTAL AGENCIES BY BAND	55	12	2	8	4

TABLE 7 - CITY FREQUENCY BAND BY COUNTY

FIRE DISTRICTS RADIO FREQUENCY BANDS					
	VHF	UHF	800	800	800
FIRE DISTRICT	CONV	CONV	CONV	TRUNK	P-
AGUILA	X				
ALPINE	X				
APACHE JUNCTION	X				
ASHFORK					
AVRA VALLEY	X				
BABOCOMARI					
BOWIE	X				
BEAVER VALLEY	X				
BLACK CANYON	X				
BLUE RIDGE	X				
BUCKEYE VALLEY	X				
BUCKSKIN	X				
BULLHEAD CITY	X				
CAMP VERDE	X				
CENTRAL HIGHTS					
CENTRAL YAVAPAI	X				
CHINO VALLEY	X				
CHLORIDE	X				
CHRISTOPHER KOHLS					
CIRCLE CITY-MORRISTOWN	X				
CLAY SPRINGS-PINEDALE	X				
COLORADO CITY	X				
CONGRESS	X				
CORNVILLE-PAGE SPRINGS					
CORONA DE TUCSON		X			
CROWN KING	X				
DAISY MOUNTAIN					
DESERT HILLS					
DIAMOND STAR					
DONEY PARK	X				
DREXEL HEIGHTS		X			
DUDLEYVILLE	X				
DUNCAN VALLEY					
EAST VERDE PARK					
EHRENBERG	X				
ELFRIDA		X			
ELOY	X				
FOREST LAKES	X				

FIRE DISTRICTS RADIO FREQUENCY BANDS (Continued)					
	VHF	UHF	800	800	800
FIRE DISTRICT	CONV	CONV	CONV	TRUNK	P-25
FORT MOHAVE					
FORT VALLEY					
FOUNTAIN HILLS	X				
FRY					
GANADO	X				
GILA BEND					
GISELA VALLEY					
GOLDEN SHORES					
GOLDEN VALLEY	X				
GOLDER RANCH	X				
GRAPEVINE MESA	X				
GREEN VALLEY	X				
GREENHAVEN					
GREER		X			
GROOM CREEK					
HARQUAHALA VALLEY	X				
HEBER-OVERGAARD	X				
Helmet Peak	X				
HIGHLANDS	X				
HUALAPAI VALLEY					
JOSEPH CITY	X				
JUNIPINE	X				
KAIBAB ESTATES					
LA CANADA					
LAKE MOHAVE RANCHOS					
LAKESIDE	X				
LAVEEN	X				
LINDEN					
MAMMOTH	X				
MARICOPA					
MAYER		X			
MESA DEL CABALLO					
MOHAVE VALLEY	X				
MONTEZUMA-RIMROCK	X				
MORMAN LAKE	X				
MOUNT ELDON					
MT. LEMMON		X			
NACO	X				
NOGALES SUBURBAN	X				

FIRE DISTRICTS RADIO FREQUENCY BANDS (Continued)					
	VHF	UHF	800	800	800
FIRE DISTRICT	CONV	CONV	CONV	TRUNK	P-25
OATMAN		X			
ORACLE VOLUNTEER					
PALO VERDE					
PARKER					
PARKS-BELLEMONT	X				
PBW					
PEEPLES VALLEY	X				
PICTURE ROCKS	X				
PIMA RURAL					
PINE DELL					
PINE LAKE					
PINE-STRAWBERRY	X				
PINETOP					
PINEWOOD	X				
PINION PINE					
PLEASANT VALLEY	X				
PUERCO VALLEY		X			
QUARTZSITE					
QUEEN VALLEY	X	X			
RINCON VALLEY		X			
RIO RICO	X				
RIO VERDE					
SABINO VISTA					
SAFFORD RURAL					
SALOME		X			
SAN MANUEL	X	X			
SEDONA	X				
SELIGMAN	X				
SHERWOOD FOREST	X				
SHOW LOW	X				
STANFIELD					
SUN CITY		X			
SUN CITY WEST					
SUN LAKES		X			
SUNNY SIDE					
SUNSITES-PEARCE		X			
THREE POINTS	X				
TIMBERLINE-	X				

TONOPAH VALLEY	X				
FIRE DISTRICTS RADIO FREQUENCY BANDS (Continued)					
	VHF	UHF	800	800	800
FIRE DISTRICT	CONV	CONV	CONV	TRUNK	P-
TONTO BASIN	X				
TONTO VILLAGE					
TRI-CITY					
TRUXTON					
TUBAC		X			
TUCSON C.C. ESTATES					
TUCSON ESTATES					
TUSAYAN	X				
VALLEY VISTA					
VERDE RURAL					
WHETSTONE					
WHISPERING PINES					
WHITE MOUNTAIN LAKE	X				
WHY	X				
WICKENBURG RURAL					
WITTMAN	X				
WOODRUFF					
YARNELL	X				
YUCCA	X				

TABLE 8 - FIRE DISTRICT FREQUENCY BANDS

TRIBAL AGENCIES RADIO FREQUENCY BANDS					
TRIBAL NATION	VHF	UHF	800	800	800
	CONV	CONV	CONV	TRUNK	P-
AK-CHIN		X			
COCOPAH	X				
COLORADO RIVER		X			
FORT MCDOWELL		X			
FORT MOHAVE	X				
GILA RIVER			X		
HOPI RESOURSE	X				
HUALAPAI	X	X			
NAVAJO DPS	X	X			
PASCUA YAQUI			X		
QUECHAN	X				
SALT RIVER	X	X			
SAN CARLOS	X	X			
TOHONO O'ODHAM			X		
WHITE MTN APACHE	X				
YAVAPAI-PRESCOTT		X			
YAVAPAI-APACHE	X				

TABLE 9 - TRIBAL AGENCY FREQUENCY BANDS

SUMMARY OF RADIO BANDS USED BY AGENCIES IN ARIZONA					
ENTITY	VHF	UHF	800	800	800
	CONV	CONV	CONV	TRUNK	P-25
STATE AGENCIES	7	6	1	1	0
COUNTY SHERIFFS	12	1	0	2	0
CITIES	54	10	2	8	4
FIRE DISTRICTS	65	16	0	0	0
TRIBAL NATIONS	10	9	3	0	0
TOTALS	148	42	6	11	4

TABLE 10 - RADIO FREQUENCIES USED IN ARIZONA

2.1.0.4 CLIMATE

Arizona's climate can be unforgiving, with winter low temperatures in the state's higher elevations often reaching -35° Fahrenheit (F) and summer high temperatures reaching over 120°F or more. The difference between maximum and minimum daily temperatures can be as much as fifty to sixty degrees Fahrenheit during the drier portions of the year. During winter months, daytime temperatures average 70°F, with night temperatures often falling to freezing or slightly below in the lower desert valleys. In the summer, the pine-clad forests in the central part of the state may have afternoon temperatures of 80°F, while overnight temperatures drop to 35°F or 40 °F.[6]

2.1.0.5 CRITICAL INFRASTRUCTURE

Arizona's critical infrastructure can be summarized in three main areas of concern: water, electricity, and telecommunications. Each of these specific areas depend on the others to support Arizona's standard of living and primary sources of income: tourism, high-tech industries, defense industries and a rising number of retirement communities around the state.

2.1.0.5.1 WATER SUPPLY

Because Arizona is located in an arid region, it relies on a water supply external to its population centers. As a result, the state has over 400 dams, of which 130 are classified as requiring critical infrastructure protection. By this definition, the state believes that the failure of one of these assets could result in a high loss of life and/or property within the region.

To best make use of the surface water when and where it is needed, highly elaborate storage reservoirs (including many of Arizona's largest dams) and delivery systems have been constructed throughout the state. The reservoirs on the Colorado, Salt, Verde, Gila, and Agua Fria rivers are among the state's most noteworthy. A threat to any of these reservoirs would present a serious threat to the region.

The Hoover Dam is the most notable dam in the state and is a major component of the state's infrastructure because of the lakes, water supply, and hydroelectric production linked to its operation. At 726 feet in height and 1,244 feet in length, it creates the largest fresh water reservoir in the United States. Additionally, as Hoover Dam is known worldwide, it is considered a likely terrorist target.

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[6] Climate of Arizona

2.1.0.5.2 ELECTRICITY

As mentioned above, the Hoover Dam and many of the 400 other dams throughout the state are also used to generate hydroelectric power. Hoover Dam is a major supplier of electric power to the western grid, which includes the states of Arizona, California, and Nevada.

Arizona is also home to the largest nuclear power generation facility in the United States. The Palo Verde Nuclear Generating Station is on 4,000 acres of land near Wintersburg, about 45 miles west of central Phoenix, and produces over 30,000 giga-watt-hours of electricity annually to serve approximately four million people in Phoenix and Southern California. The Nuclear Regulatory Commission recently designated Palo Verde as a high-risk "Category 4" facility, making it the most monitored nuclear power plant in the United States. It is notable that during the Cold War the Soviet Union targeted Palo Verde in its nuclear war planning scenarios.

2.1.0.5.3 TELECOMMUNICATIONS

To support the primary industries of the state, telecom is a major component of the infrastructure in Arizona. As tourism depends on the banking and travel industries, telecommunications in turn provides the conduit enabling them to communicate. Two large communications companies, Qwest and AT&T, serve Arizona. Both companies have major communications hubs in this state and likely must stay in business for the state's economy to remain solvent.

2.1.0.5.4 TOURISM

Arizona's largest industries are tourism and the industries it supports, such as: banking, various service industries, agriculture, electricity and telecommunications. Each industry has flourished in Arizona recently and there are no signs of the trend slowing. In 2006, tourism contributed almost $19 billon to the Arizona economy.

2.1.0.5.5 HIGH-TECH INDUSTRIES

Arizona is the home of many high-tech industrial companies' facilities, including Motorola, Intel, Owens Semi-Conductors, etc. They, like those of the tourism marketplace, require that water, electricity, and telecom remain available to them at all times.

2.2.0.5.6 DEFENSE INDUSTRIAL

Some of the largest defense industrial contractors also have Arizona facilities, including Raytheon, Honeywell, and General Dynamics. These companies are critical to the defense of the United States and their requirements for water, electricity, and telecom are also clearly defined.

2.2.0.5.7 RETIREMENT COMMUNITIES

Today, one of the fastest growing industries in Arizona is the retirement living industry and the companies providing support to it. Their requirements include medical facilities, banking, water, electricity and telecommunications. Because of Arizona's climate, many communities are growing at record-breaking pace, with more people moving to the state to enjoy their senior years.

2.2.0.5.8 BANKING AND FINANCE

The banking and finance sector supports all of the other critical infrastructure components discussed above, and includes: physical banking and financial structures, wholesale banking operations, financial markets, regulatory institutions, physical repositories for documents and financial resources. Several banks also maintain their call center operations in Arizona. As with other infrastructure components, they depend on water, electricity, and telecommunications for their ability to do business in Arizona.

2.1.0.5.9 AIRPORTS

Arizona has 79 airports, listed in Table 11 and shown visually in Figure 5 below. These airports provide vital links to the state for both tourism and day-to-day operations. The state's airports, especially Phoenix International (Sky Harbor), and Tucson International Airport provide convenient access for travelers from around the world. Many regional and private airports provide additional links used for transportation and industry as well as tourism. Airport operations and activities in Arizona is provided in Appendix F of this SCIP.

AirNav Recognized Airstrips		
Avi Suquilla	Grand Canyon Bar Ten Airstrip	Ryan Field
Bagdad	Grand Canyon Caverns	Safford Regional
Benson Municipal	Grand Canyon West	San Carkis Apache
Bisbee Douglas International	Grande Canyon National Park	San Manuel
Bisbee Municipal	Greenlee County	Scottsdale
Buckeye Municipal	H A Clark Memorial Field	Sedona
Casa Grande Municipal	Holbrook Municipal	Seligman
Chandler Municipal	Kayenta	Sells
Chinle Municipal	Kearny	Show Low Regional
Cibecue	Kingman	Sierra Vista Municipal
Cochise College	Lake Havasu City	St Johns Industrial Air Park
Cochise County	Laughlin/Bullhead International	Stellar Airpark
Colorado City Municipal	Marana Regional	Sun Valley
Coolidge Municipal	Marble Canyon	Superior Municipal
Cottonwood	Nogales International	Taylor
Douglas Municipal	Page Municipal	Temple Bar
Eagle Airpark	Payson	Tombstone Municipal
Eloy Municipal	Pearce Ferry	Town of Springerville Municipal
Eric Marcus Municipal Airport	Phoenix Deer Valley	Tuba City
Ernest A Love Field	Phoenix Goodyear	Tucson International
Estrella Sailport	Phoenix Regional	Valle
Falcon Field	Phoenix Sky Harbor Intl	Whiteriver
Flagstaff Pulliam	Pinal Airpark	Wickenburg Municipal
Flying J Ranch	Pleasant Valley	Williams Gateway
Gila Bend Municipal	Polacca	Window Rock
Glendale Municipal	Rolle Airfield	Winslow-Lindbergh Regional
		Yuma Mcas/Yuma International

TABLE 11- ARIZONA'S AIRPORTS [7]

[7] AirNav.com

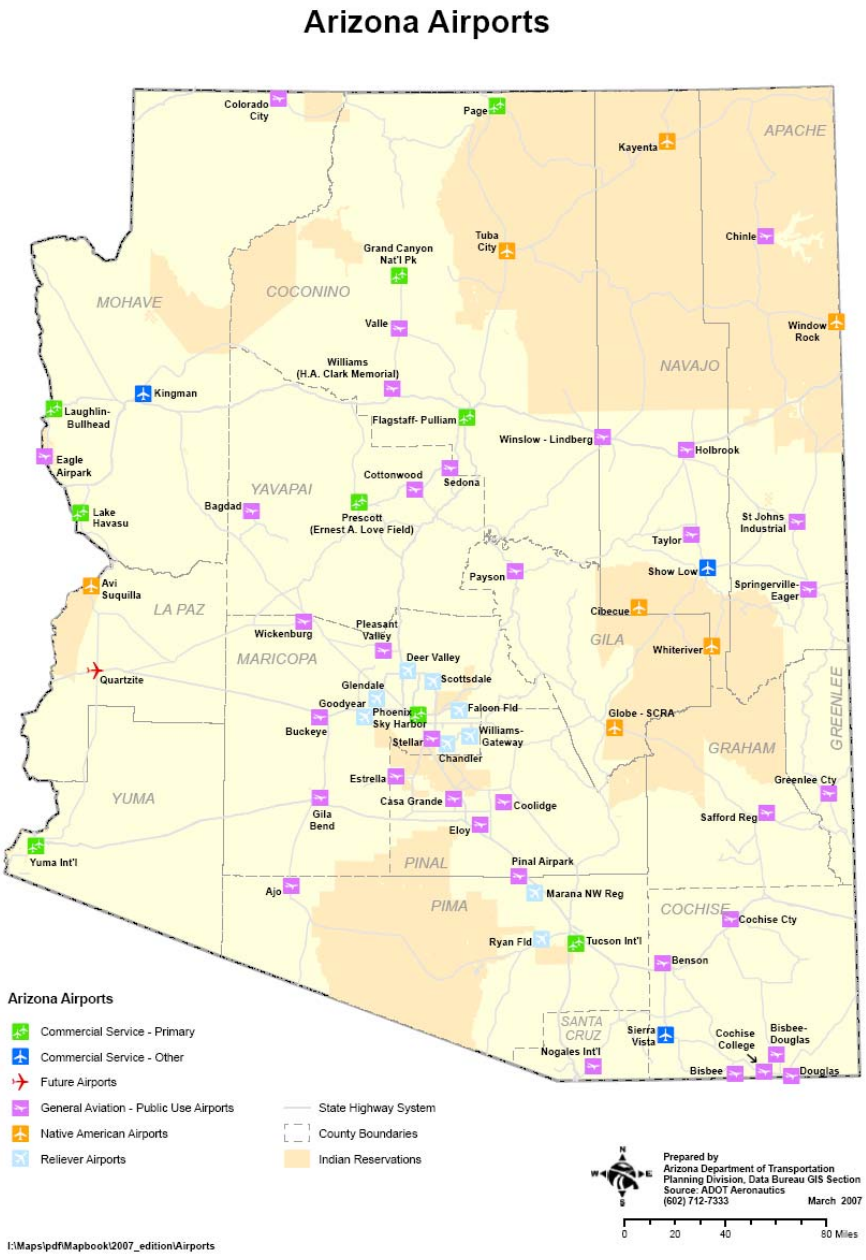

FIGURE 5- ARIZONA'S AIRPORTS[8]

[8] Map provided by Arizona Department of Transportation

2.1.0.6 ROADWAYS

2.1.0.6.1 INTERSTATE HIGHWAY SYSTEM

Five interstate highways (8, 10, 17, 19, and 40) transect the state and play major roles in its commerce and transportation environment. Interstates 10 and 40 traverse the state from its eastern border to its western border. Interstate 10 is the east-west corridor along Arizona's south, while Interstate 40 serves as the east-west corridor in the north-central region of the state. Interstates 17 and 19 are north-south and are entirely within the state. Interstate 8 starts within the state and travels west until it reaches the Pacific Ocean at San Diego. A disruption to any of these roadways could be devastating for commerce on both coasts as they are part of the highway system connecting the entire U.S.

CANAMEX Trade Corridor

The United States Congress defined the CANAMEX trade Corridor in the National Highway Systems Designation Act of 1996. The corridor is considered a high priority for the United States, Mexico and Canada. As a major cornerstone to the North American Free Trade Agreement (NAFTA), the CANAMEX Corridor provides many opportunities to build regional economic prosperity through innovating:

- Safe and efficient multi-modal transportation networks
- Enhanced global competitiveness, which requires quality education, an accessible telecommunications infrastructure and an appropriate regulatory environment
- Shared commitment to the region's Quality of Life[9]

The corridor extends from Nogales, Arizona, through Nevada, Utah, Idaho, and Montana to the Canadian border. Generally, in Arizona, the corridor follows Interstate 19 from Nogales to Tucson, then goes north on Interstate 10 through Phoenix. From there, the corridor follows US-93 to the Nevada border.

[9] http://www.canamex.org/

2.1.0.6.3 SECONDARY HIGHWAYS

According to the Arizona Department of Transportation (ADOT), there are several secondary roadways critical to the state's vitality. This is especially true should emergency evacuations be required. These secondary roadways are listed in Table 12 (below).

Secondary Roadways			
US-60	SR-79	US-89	SR-101
US-66	SR-86	SR-90	SR-102
SR-71	SR-87	US-93	US-180
SR-77	US-89-A	US-95	US-191

TABLE 12 - SECONDARY ROADWAYS

Should an evacuation take place, most of the roadways listed above would become one-way roads used as city evacuation routes. Certain roads would be reserved for use by public safety officials. ADOT has established plans to handle mass evacuations should they be required. For additional information about mass evacuation routes, contact ADOT. For information about any of the routes listed above, go to:

http://members.tripod.com/~rachela/roads/az_roads.html

2.1.0.6.4 BRIDGES

A bridge crossing a waterway may be considered "critical," since there are very few alternate routes available, especially when crossing state borders. Bridges crossing the normally dry Salt and Gila Rivers in and near the Phoenix metro area, and the Santa Cruz, Rillito, and Pantanto Wash in and near the Tucson area are critical to allow commuters to travel to and from work. Similarly, several major railroad lines use critical bridges to cross these waterways. Some of the bridges considered to be critical include:

- Glen Canyon Dam Bridge
- Glen Canyon Bridge
- Navajo Bridge
- Hoover Dam
- Topoc
- Parker
- Yuma
- Blythe

- Needles
- Bull Head City

2.1.0.6.5 WATERWAYS

The major rivers in Arizona are the Colorado, Little Colorado, Gila, Salt, Verde, Santa Cruz and Bill Williams. In addition to these waterways, there are several popular lake destinations, including Lake Mead, Lake Havasu, Lake Mohave, Theodore Roosevelt Lake, San Carlos Lake, Saguaro Lake, Lake Pleasant, Apache Lake and Lake Powell.

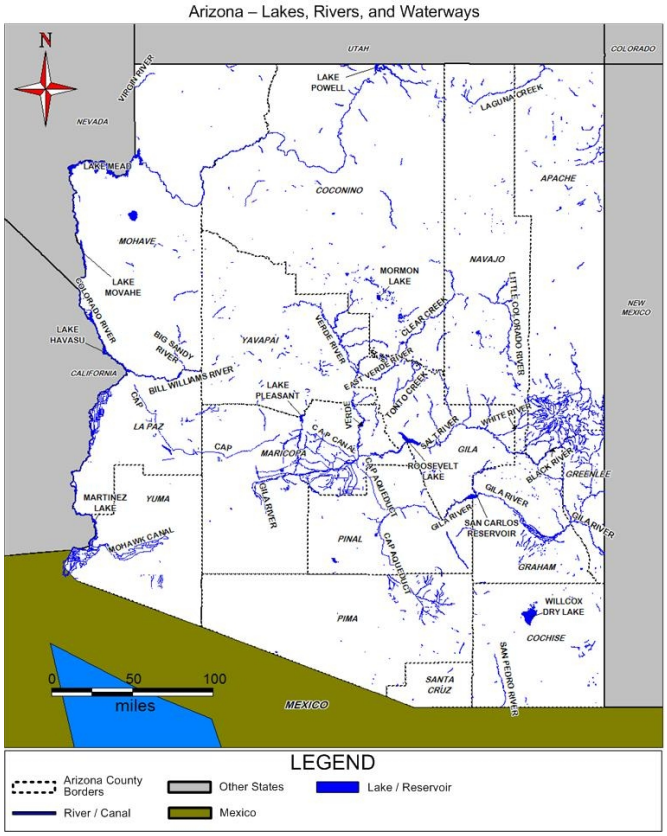

Figure 6 - Arizona lakes, rivers, and waterway

As mentioned earlier, to best make use of the surface water when and where it is needed, highly elaborate storage reservoirs (including many of Arizona's lakes) and delivery systems have been constructed throughout the state. The reservoirs on the Salt, Verde, Gila, and Agua Fria rivers are among the state's most noteworthy. In addition, the 336-mile Central Arizona Project (CAP) canal transports Colorado River water from near Parker into and out of Lake Pleasant, and then to treatment plants in Phoenix and Tucson. A map with Arizona's lakes, rivers and waterways is included as Figure 6. Although the map indicates what appear to be many waterways, none provides a transportation corridor into the state. The waterways are typically controlled to provide water and electricity for Arizona's residents.

2.1.0.6.6 PORTS OF ENTRY

The most economically important port in Arizona is Nogales. Nogales is one of the four primary ports of entry between the United States and Mexico. Almost $19 billion in trade

comes through this port annyally , with 89% of all surface mode trade (truck, rail, etc.) between Arizona and Mexico passing through this city.

2.1.0.7 MAJOR GEOGRAPHICAL CONSIDERATIONS

Arizona shares a 389-mile border with Mexico, most of which is unregulated and unprotected, as its sheer size makes it impossible to patrol adequately with existing Border Patrol resources.

Arizona also has two major desert environments: the lower desert and the high desert. Each has its own special set of requirements for equipment, protection, weather conditions, and environmental concerns.

In north central Arizona are the San Francisco Mountains, situated near the Flagstaff area. These mountains and their associated topography (Humphreys Peak, north of Flagstaff, is 12, 633 feet above sea level) present additional challenges to Arizona. Across the northwest portion of the state is the Grand Canyon, with altitude drops of over 5,000 feet to the Colorado River. The overall geography, coupled with the severe climate, makes Arizona's overall environment very challenging and unforgiving.

2.1.0.8 ANNUAL AND UPCOMING EVENTS

2.1.0.8.1 ANNUAL EVENTS

Arizona is the home of six professional sports teams including the National Basketball Association's (NBA's) Phoenix Suns, Major League Baseball's (MLB's) Arizona Diamondbacks, the National Football League's (NFL's) Arizona Cardinals, the National Hockey League's (NHL's) Phoenix Coyotes, the Women's National Basketball Association's (WNBA's) Phoenix Mercury and the Arena Football League's (AFL's) Arizona Rattlers. Additionally, Arizona hosts major league baseball spring training camps at nine municipal stadiums in the Phoenix/Tucson regions that are visited by tens of thousands each year.

The major sporting venues for these teams include the University of Phoenix Stadium, America West Arena, Chase Field, Arizona State University (ASU) Sun Devil Stadium, Northern Arizona University (NAU), and Glendale Arena. All of these venues, which rank among the largest and most modern in the country, reach sold-out capacity on a regular basis as they are booked throughout the year.

Tempe hosts one of the largest New Years' Eve celebrations in the country, which is attended by approximately 100,000 people.

Phoenix is the home of several world-class parades as well as marathons and walks. Some of

these events are:

- Runners Den Road Classic—February
- Laveen Country Challenge bike race—February
- Lost Dutchman Marathon—February
- Crown King 50k—March
- MS-150 two day bike ride—March
- Highline Trail 50 mile race—April
- Ironman Triathlon—April
- Arizona diabetes Association Walk for a Cure (East, West, and Central)—September
- Cactus Cha-cha foot race—October
- Susan G. Komen Race for the Cure—October
- Multiple Sclerosis (MS) Walk on the Wild Side—October
- Young Men's Christian Association (YMCA) Half Marathon—October
- Javalina Jundred 100 mile race—October
- Juvenile Diabetes Research Foundation (JDRF) Walk to Cure Diabetes—November
- Fiesta Bowl Half Marathon—December
- Fiesta Bowl Parade—December
- SRP Cycle for Life—December

In addition, the Phoenix area also plays host to one of the best-attended golf tournaments in the world each year. The event, now called the Fred Billings Ramsey Group, Inc. (FBR) Open, regularly draws over 500,000 spectators during tournament week, making it one of the largest recurring spectator events in the nation. Phoenix International Raceway hosts National Association for Stock Car Auto Racing (NASCAR) Nextel Cup events twice a year, bringing many tens of thousands of fans to the area.

Because the southern half of Arizona is known for its warm and dry winter weather, communities in this part of the state, especially those in the Tucson area, play host to a multitude of large-scale, high-profile events from November through February. Like the major sporting activities, these events will also draw thousands of visitors.

- Tucson Film and Music Festival
- Arizona Film Festival
- Sedona Jazz on the Rocks

- PGA Match Play Golf Championship
- El Tour De Tucson Bike Race (with as many as 10,000 riders)
- Tucson Gem and Mineral Show
- Tucson Rodeo and Parade

Further evidence of Arizona's incredible drawing power during the winter months is that many communities in the southern half of the state will cite two population figures: one for the summer and another for winter, when many thousands of "snowbirds" – retirees still living part time in colder climates – make their annual migration to Arizona.

2.1.0.8.2 UPCOMING EVENTS

In addition to the many annual events that Arizona hosts, many onetime events take place in the state. Most notable is the 2008 Super Bowl (XLII) hosted in Glendale in the University of Phoenix stadium.

2.1.0.9 TYPICAL DISASTERS

The following Table outlines the disasters declared by the Federal Emergency Management Agency (FEMA) in the state since June 19, 2002. Additionally, Arizona Emergency Operation Centers (EOCs) contributed to this information (Table 14, below). The county EOC information includes EOC activations, multi-jurisdictional, and multi-disciplinary actions that occurred within their jurisdiction. It also includes events that occur on a regular basis to which multiple agencies will often respond. In some cases the EOC would not be activated, as the event reaches its end in a matter of moments (as in the case of a multi-jurisdictional police chase).

FEMA Declared Emergencies		
Number	Declared	Description
1660	09/07/2006	Severe Storms and Flooding
2645	06/18/2006	Brins Fire
2643	06/15/2006	Woody Fire
2642	06/13/2006	Potato Fire
2640	06/01/2006	LaBarraca Fire
3241	09/12/2005	Hurricane Katrina Evacuation
2570	07/22/2005	Edge Fire Complex
2562	06/23/2005	Humbug Fire
2561	06/22/2005	Cave Creek Fire Complex
2560	06/12/2005	Hulet Fire
2559	06/08/2005	Bobby Fire
2558	05/26/2005	Vekol Fire
1586	04/14/2005	Severe Storms and Flooding
1581	02/17/2005	Severe Storms and Flooding
2523	06/28/2004	Willow Fire
2520	06/09/2004	Three Forks Fire
2478	07/14/2003	Kinishba Fire
1477	07/14/2003	Wildfire
2471	06/21/2003	Ash Fire
2470	06/18/2003	Aspen Fire
2440	07/14/2002	Wild Cow Fire
2439	07/14/2002	Oracle Hill Fire
1422	06/25/2002	Wildfires
2430	06/21/2002	Chedeski Farms Fire
2429	06/19/2002	Rodeo Fire

TABLE 13 - DECLARED DISASTERS[10]

[10] http://www.fema.gov/femaNews/disasterSearch.do

County	Event
Cochise	Hazardous material
	Landfill in Mexico burning toxic fumes into United States
	Flashfloods during monsoon season
	Search and rescue missions
	Multiple vehicle traffic accident
	Bomb threat
	Armed robbery
	Manning boarder during drug wars/runs on the border
La Paz	HazMat incident at Interstate 10 at mile post 10. Included Arizona Department of Public Safety, Arizona Department of Transportation, La Paz Sheriff's Department, California Highway Patrol, California Transit, Emergency fire and rescue departments
Maricopa	(8/2007) – Flooding caused roadway and infrastructure damage in Cave Creek
	(6-7/2005) – Cave Creek Fire
Mohave	(2007) - Flooding
	(2007) - HazMat incident
	(2006) - Wild land fires
	(2005) - Flooding
Pima	(4/25/1995) – Large fires involving multiple fire agencies responding per MOA. Law enforcement assistance for point control and investigation purposes
	(1993) – Flooding as a result of natural or manmade events – most common occurrence
	(1987) – Rioting and demonstations – the City of Tucson experienced rioting after the University of Arizona won the national basketball championshop. Pima County Sheriff's Department was called in to assist.
	Mass casuality event – aircraft down

County	Event
	Cross-jurisdictional vehicle pursuit
	Hazardous material events
	Search and rescue – missing children, persons
Pinal	(4 times within the last 2 years) – main telephone lines cut (fiber). All lines and cellular devices were no longer functional. County 911 services was not able to receive calls (5 PSAPS, 5,500 square miles). Required mobile command vehicle from state EOC.
	Major power outages caused by storms, such as monsoons, microburst, etc. – Requires evacuations, shelters, etc. This generally will also disrupt primary telephone circuits and cellular transmission towers. Requires the use of secondary communications (2-way radio) and satellite phones witin and outside of the local region.
	(Regularly – annual) – Flooding will cause a response including evacuation, shelter, etc.
	(Regularly – annual) – Wildfires will cause a response including evacuation, shelter, etc.
	(Several times a year) – Hazardous material releases will cause a response including evacuation, shelter, etc.
	Bomb threats at major facilities – requires government and civilian evacuations
	Prison escapes and riots – requires a multi-agency, multi-discipline response. This includes responses necessary for manhunts, security checkpoints and traffic stops/searches.
	Vehicle chases – multi-jurisdictions
	Vehicle accidents on state highways and rail – Interstates 10, and 8, U.S.-60, the Union Pacific and Copper Basin Railroad. Any accident would require response from multiple agencies and disciplines. In each case, both ingress and egress is limted, would likely be across county or state boundaries and affecting thousands (of communitors).
Santa Cruz	(8/2007) Nogales Wash Flooding – City of Nogases, Santa Cruz County and Arizona declare State of Emergency. City of Nogales, Santa Cruz County, DDEM, Department of Corrections, Army Corps of Engineers and International Boundary Water

County	Event
	Commission participated in this event.
	(8/2007) Elm Street Fire – 8 apartments burned, 30 people evacuated. Red Cross called to assist Santa Cruz EOC.
	(7/2007) Valle Verde Water Wells contaminated – City and county declare emergencies. Activation of City of Nogales emergency operations, county health, Santa Cruz EOC
	(2006) Flooding in Nogales, Sornora (Mexico) resulted in Nogales Arizona personnel and equipment from several fire departments in Santa Cruz County to assist Mexico.
	(2006) Sulfuric acid spill in Mexico along the Santa Cruz River – Nogales, Arizona Fire, Nogalas Police Department, Environmental Protection Agency, communications with Nogales, Mexico required.
	(2006) VH Shopping Plaza Structure Fire, Nogales Sonora (Mexico). Nogales Arizona Fire Department called to assist.
	(8/2006) HazMat incident with Border Patrol – Rio Rico Fire, Nogales Fire Department, Border Patrol, Santa Cruz Sheriff's Department, and EOC participated.
	(8/2006) Mi Casa Evacuation due to floodling – More than 100 mobile homes and 300 individuals evacuated. EOC activated and Red Cross assisted.
Yavapai	(6-7/2006) – Tiger Complex Fire – on the southeast side of the county threatened the community of Crown King.
	(6/18/2006) – Brins Fire in Sedona caused the evacuation of Oak Creek Canyon and parts of the north side of Sedona. Included animal disaster services, shelter, etc. This fire involved two Nation Incident Management Teams.
	(6/1/2006) – La Barranca Fire in the Village of Oak Creek caused the evacuation of the east side of the communication and included shelter for those evacuated.
	(6/7/2006) – Battle Fire in Mayer threatened that town and surrounding ranches. Caused evacuations, and shelter.
	(12/27/2005) – The Woodlands Apartment Fire in Prescot included the need for evacuation and shelter
	(12/2005) – The Cornville propane event was caused by an overturned truck, resulting in the evacuation of 200 homes and shelter operations.
	(8/31/205) – Bennett Oil Fire in Prescott was at a gas station – this caused the

County	Event
	evacuation of several neighborhoods and the Tavapai Community College. Shelter operations was set up for this event.
	(7/2005) – Cave Creek Fire was a major incident that involved the east side of the county. This fire also involved three National Incident Management Teams, included evacuations and shelter services to become operational.
	(7/2005) – Lousy Canyon Fire near the City of Black Canyon, this included evacuation and shelter services.
	(2/2005) – Presidential Flood Declaration for Yavapai County
	(1/2005) - Presidential Flood Declaration for Yavapai County
	(5/15-17/2002) – The Indian Fire was a major incident including a National Incident Management Team. This fire was responsible for causing the evacuation of 3,000+ people and included a major shelter program.

TABLE 14 - LOCAL GOVERNMENT MULTI-JURISDICTIONAL, MULTI-DISCIPLINARY EVENTS

2.1.1 NIMS/Multi-Agency Coordination System

Recognizing the critical nature of coordinating emergency response and communications, President Bush issued Homeland Security Presidential Directive-5 (HSPD-5) on February 28, 2003. This directive ordered the Secretary of Homeland Security to develop and oversee a new and more advanced Incident Command System (ICS) known as the National Incident Management System (NIMS). NIMS' goal is to provide a consistent nationwide template for all organizations that may work together in a cooperative response to a major incident. By training in a national standardized program all government, private sector and nongovernmental organizations will be better equipped to coordinate and communicate their actions during planning, response, and recovery of domestic incidents.

The state understands the majority of incidents are managed locally. The initial response to most incidents is handled by local 911 dispatch centers, emergency responders within a single jurisdiction, and direct supporters of those emergency responders. When incidents escalate, the need for a scalable command and communications system is required for responder safety and efficient resource use.

In the event of an incident for which state assistance is required, the state Emergency Operations Center (EOC) is activated and acts as the Multi-Agency Coordination Center (MCC) for the state. The EOC staffing model uses the NIMS ICS command structure. The resource unit leader in the planning section is responsible for the inventory and allocation of resources

to the incident while maintaining readiness in the remainder of the state. Personnel with knowledge of each discipline's deployment status assist the Resource Unit Leader. For example, the state EOC may not activate during isolated wildfires, but if an incident escalates and requires additional state resources the state EOC activates. The Resource Unit from the State Land Department briefs the state EOC Resource Unit Leader on the status of fire resources assigned to the incident.

The state is divided into five regions with a designated primary dispatch center as the contact point for coordinating each regional response. When the resources deploy to the impacted area, the response to the area of operation is coordinated. The primary contact center monitors the state's current interoperable communications network, AIRS. When the responding resources enter into the affected state Homeland Defense region, the primary dispatch center for that region coordinates the staging of resources until they are assigned to the incident.

The primary contact center and incident Communications Unit Leader (COML) coordinates available frequency spectrum usage to provide communications for the Incident Commander to ensure safe and effective communications.

The state currently utilizes several plans (e.g., Statewide Emergency Response and Recovery Plan, agency business continuity plans and continuity of government plans, etc.) to provide additional resources to county and local governments. The Arizona Department of Lands coordinates wild-lands firefighting involving state land. The state utilizes pre-established MOUs with local fire departments and fire districts to obtain additional resources (additional information may be found in the *Fire Chiefs Mutual Aid Plan* http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf). The state requests and coordinates the assignment of the additional fire resources to the incident. These requests utilize standard fire resource typing. Once assigned to the incident these resources integrate into the ICS command structure following the NIMS example.

Mutual Aid and NIMS

As an example of how the mutual aid system works within the overall state NIMS program, requests for the Phoenix UASI region resources are made through the Phoenix Fire Regional Dispatch Center. Available assets include law enforcement, bomb squad, Special Weapons And Tactics (SWAT), Hazardous Materials (HazMat), Weapons of Mass Destruction (WMD) and Chemical, Biological, Radiological and Nuclear (CBRN) units. Once assets are requested, the

City of Phoenix EOC opens and notifies the County, state EOCs, Arizona Department of Public Safety (DPS) Duty Officer, and City EOCs in the UASI system. The use common terminology to communicate requests and instructions. Accountability starts at the individual unit level with the local incident commander, and channels up through the command structure as the incident escalates. Department commanding officers are responsible for their agency's resources, county-level officials are responsible for the departments, and state officials are responsible for state resources and coordinating the accountability of the committed county/local departments.

2.1.2 REGIONS/JURISDICTIONS

2.1.2.1 COUNTIES

Arizona is comprised of 15 counties. Table 15 lists the cities and towns within each county. Politically, each county has an elected board of supervisors.

APACHE COUNTY
Eagar
St.Johns
Springerville

COCHISE COUNTY
Benson
Bisbee
Douglas
Huachuca City
Sierra Vista
Tombstone
Willcox

COCONINO COUNTY
Flagstaff
Fredonia
Page
Williams
Sedona*

GILA COUNTY
Globe
Hayden
Miami
Payson
StarValley
Winkelman*

GRAHAM COUNTY
Pima
Safford
Thatcher

GREENLEE COUNTY
Clifton
Duncan

LAPAZ COUNTY
Parker
Quartzsite

MARICOPA COUNTY
Apache Junction*
Avondale
Buckeye
Carefree
Cave Creek
Chandler
El Mirage
Fountain Hills
Gila Bend
Gilbert
Glendale
Goodyear
Guadalupe
Litchfield Park
Mesa
Paradise Valley
Peoria*
Phoenix
Queen Creek*
Scottsdale
Surprise
Tempe
Tolleson
Wickenburg
Youngtown

MOHAVE COUNTY
Bullhead City
Colorado City
Kingman
Lake Havasu City

NAVAJO COUNTY
Holbrook
Pinetop-Lakeside
Show Low
Snowflake
Taylor
Winslow

PIMA COUNTY
Marana
Oro Valley
Sahuarita
South Tucson
Tucson

PINAL COUNTY
Apache Junction*
Casa Grande
Coolidge
Eloy
Florence
Kearny
Mammoth
Maricopa
Queen Creek*
Superior
Winkelman*

SANTA CRUZ COUNTY
Nogales
Patagonia

YAVAPAI COUNTY
Camp Verde
Chino Valley
Clarkdale
Cottonwood
Dewey-Humboldt
Jerome
Peoria*
Prescott
Prescott Valley
Sedona*

YUMA COUNTY
San Luis
Somerton
Wellton
Yuma

**These jurisdiction's incorporated limits are in multiple counties.*

TABLE 15- CITIES AND COUNTIES IN ARIZONA

2.1.2.2 Regional Advisory Councils

Arizona has created a series of Regional Advisory Councils (RACs) (see Figure 7 below) pursuant to section 41-4258 of the Arizona Code. The Regions represent the state's geographical divisions for planning and coordination purposes. The RACs are tasked with developing, implementing and maintaining regional homeland security initiatives. Each RAC also contributes to implementing the state's comprehensive risk assessment. Additionally, RACs assist the integrated regional approach to homeland security issues in the state, and establish a baseline prevention and response capability (through their anchor cities) that is consistent with the state and regional plans. RACs collaborate with other councils and organizations to ensure the successful integration of homeland security programs and initiatives. RACs, however, do not have the authority to enter into MOUs. RACs develop a list

of requests for homeland security grant program monies and forward these requests to the Director of the Arizona Department of Homeland Security. RACs are also called upon to make recommendations to the state on the allocation of state homeland security grant monies to eligible entities. Each RAC is composed of:

- A fire service representative from an urban or suburban area within the region
- A fire service representative from a rural area in the region
- A police chief
- A county sheriff
- A tribal representative
- An emergency manager
- A mayor
- A county supervisor
- Two at-large positions
- A representative from the DPS
- A public health representative

Table 16 (below) indicates the Homeland Security Region or RAC and their counties.

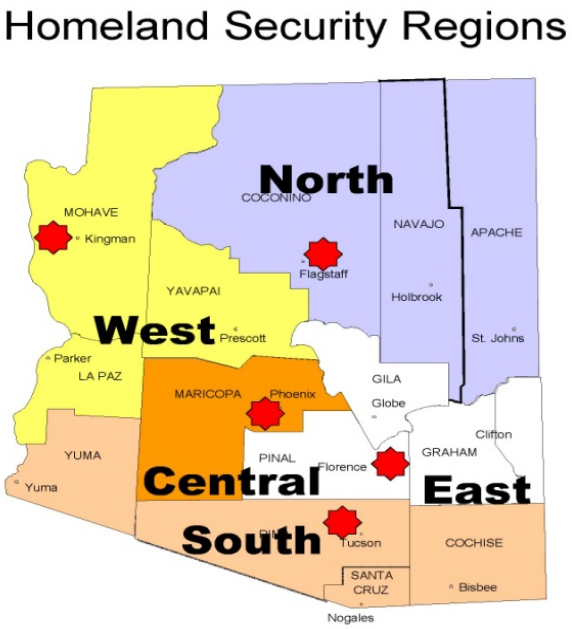

FIGURE 7 - HOMELAND SECURITY REGIONS (ALSO KNOWN AS REGIONAL ADVISORY COUNCILS RACS)

Central	East	North	South	West
Maricopa	Gila	Coconino	Pima	Mohave
	Graham	Apache	Cochise	La Paz
	Greenlee	Navajo	Santa Cruz	Yavapai
	Pinal		Yuma	

TABLE 16- RACS BY COUNTY

2.1.3 URBAN AREA SECURITY INITIATIVES / TACTICAL INTEROPERABILITY COMMUNICATIONS PLANS

Today, the Phoenix Urban Area and Tucson Urban Area are designated as UASI regions. The Areas, Regions, and other required information is included in Table 17 below.

UASI Area	Regions / Jurisdictions	TICP Title/ Completion Date	POC Name	POC Email
Phoenix	Maricopa County	*Phoenix Urban Area Tactical Interoperable Communications Plan* May 2006	Jesse Cooper	jesse.cooper@phoenix.gov
Tucson	Pima County	Does not have a TIC Plan	Brad Olson	Brad.olson@tucsonaz.gov

TABLE 17-UASI/TIC PLANS

The Phoenix UASI

The Phoenix UASI encompasses all of Maricopa County, which is also the entire Central Region RAC. Figure 8 below illustrates the Phoenix UASI's area.

The Phoenix Area UASI includes the municipalities listed in Table 18 below.

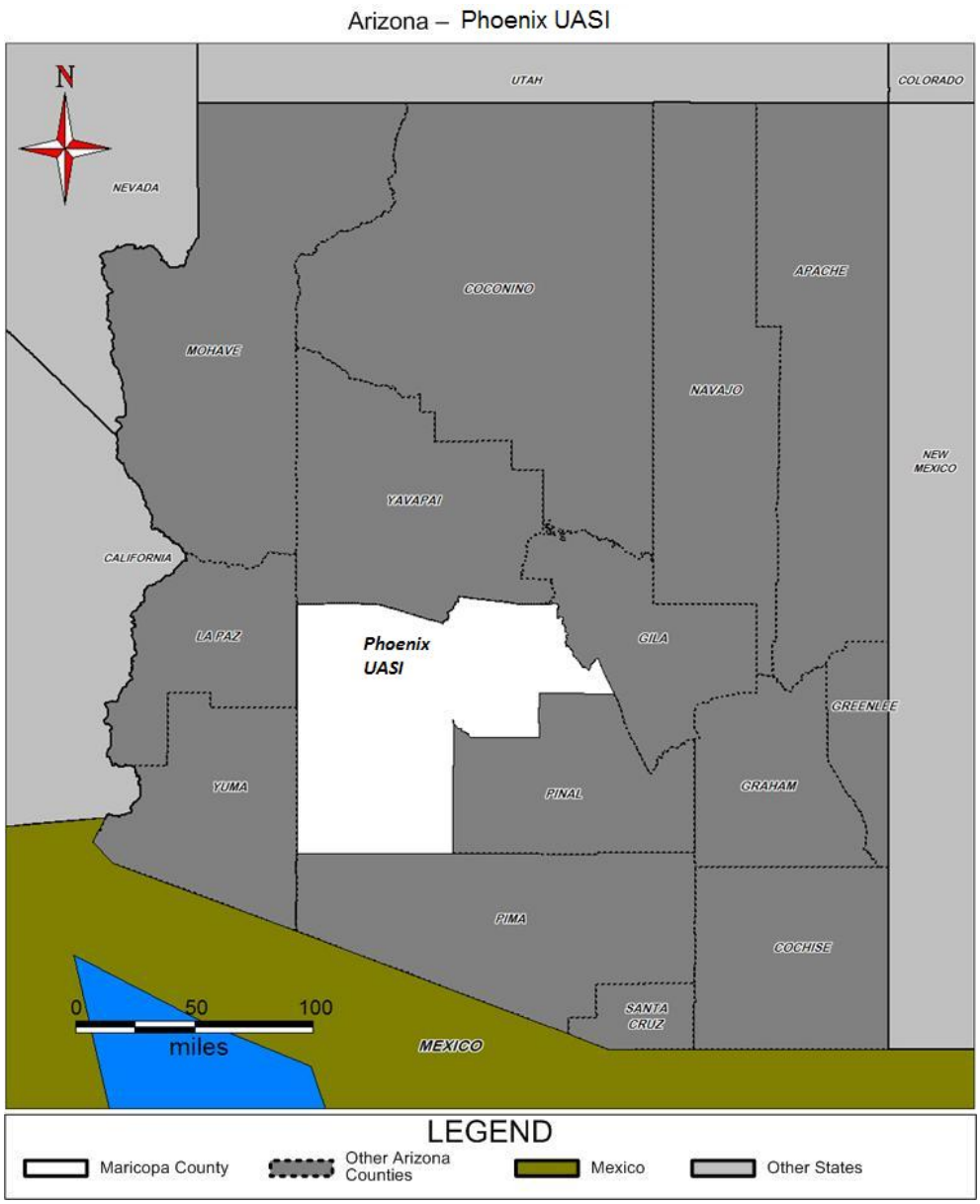

FIGURE 8- PHOENIX UASI- INCLUDES ALL MARICOPA COUNTY

Cities/towns included in Phoenix UASI	
Apache Junction	Paradise Valley
Avondale	Peoria
Buckeye	Phoenix
Carefree	Queen Creek
Cave Creek	Scottsdale
Chandler	Surprise
El Mirage	Tempe
Fountain Hills	Tolleson
Gila Bend	Wickenburg
Gilbert	Youngtown
Glendale	Fort McDowell Indian Community
Goodyear	Gila River Indian Community
Guadalupe	Salt River Pima-Maricopa Indian Community
Litchfield Park	State of Arizona
Mesa	Unincorporated Maricopa County

TABLE 18- PHOENIX UASI CITIES

The Phoenix UASI Area Tactical Interoperability Communications (TIC) Plan, entitled *Phoenix Urban Area Tactical Interoperable Communications Plan*, was completed in May 2006. On August 5, 2006, a full-scale validation exercise was held at the University of Phoenix Stadium. The exercise was performed in conjunction with a scrimmage game and the stadium's grand opening. The results of the Phoenix UASI TIC Plan exercise were documented in an after-action report. Members from ICTAP and DHS were on site to evaluate and validate the Phoenix UASI TIC Plan.

Integration of the TIC Plan

The existing Phoenix UASI TIC Plan captures resources specific to response capabilities within its Urban Area and describes state resources that may be used in times of emergency. The Phoenix TIC Plan has been exercised effectively in several public safety incidents and events. Authorized persons may review the Phoenix TIC Plan by contacting the Phoenix UASI or DHS. This Arizona SCIP incorporates the requirements of the Phoenix TIC Plan and is complementary

to it. To illustrate this fact, the statewide interoperably plan demonstration project will connect the state radio system to the Phoenix-Mesa system. This interconnection will demonstrate the state's ability to integrate with the Phoenix UASI TIC Plan and will enable immediate interoperability between the systems.

Tactical Interoperability Plan

The Phoenix UASI TIC Plan is available in its entirety from the UASI point of contact (POC). While the TIC Plan focus on specific tactical resources available, the SCIP is designed as a strategy document. TIC Plans will support the SCIP and will be developed and revised to ensure that all TIC Plans are in alignment with the SCIP as a resource to provide specific communications to authorized personnel via the POC or the www.niix.org website.

After-Action Report:

The complete after-action report is available from the Phoenix UASI POC and is available to authorized personnel at https://www.llis.dhs.gov/.

Point of Contact:

The Phoenix UASI Area TIC Plan Primary and Alternate POCs are:

Phoenix UASI Primary POC:

Name:	Jesse W. Cooper
Title:	Communications/IT Manager, Phoenix Police Department
Address:	100 E. Elwood Street, Phoenix, Arizona, 85040-1071
Office:	602-534-0315
Mobile:	602-768-4314
E-mail:	jesse.cooper@phoenix.gov

Phoenix UASI Alternate POC:

Name:	Michael G. Worrell
Title:	Captain, Phoenix Fire Department
Address:	150 S. 12th Street, Phoenix, Arizona, 85034
Mobile:	602-370-5232
E-mail:	mike.g.worrell@phoenix.gov

The Tucson UASI

The Tucson UASI area covers the entire Pima County Region, as shown in Figure 9 below. Cities covered by the UASI are listed in Table 19.

Tucson was recently designated a UASI region and has not yet completed a TIC Plan.

TIC Plan Integration

Tucson advises that it will not be required to complete a TIC Plan. There are members of the Tucson UASI who are also members of the PSCC and work with the Commission, thus assuring the Tucson UASI and the state's planning efforts will be aligned.

POC for the Tucson UASI

Tucson UASI Primary POC:

Name:	Brad Olson
Title:	Deputy Chief, Tucson Fire Department
Address:	265 S Church Ave, Tucson, AZ 85701
Office:	520-791-4806 x 1210
E-mail:	brad.olson@tucsonaz.gov

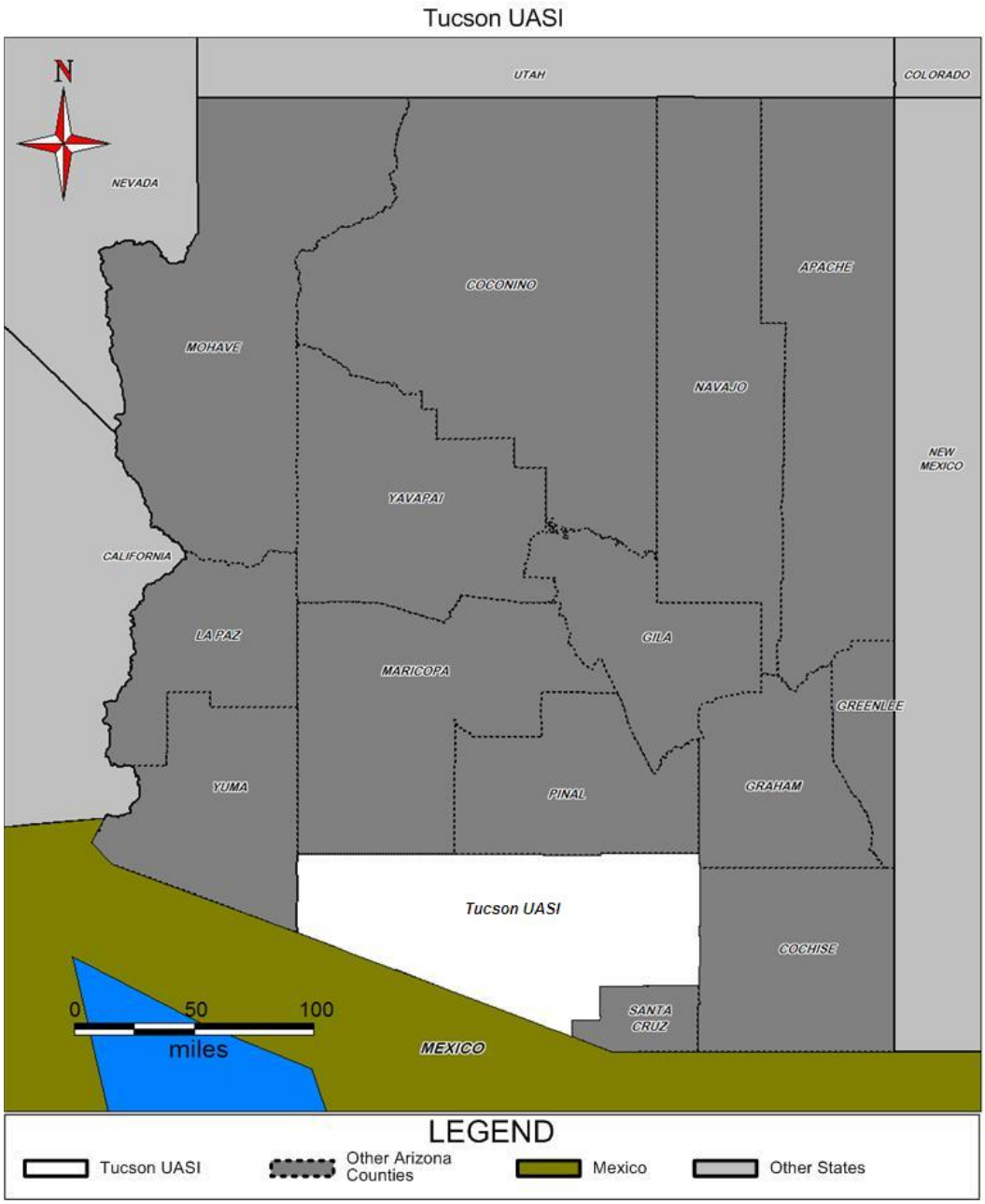

FIGURE 9 - TUCSON UASI - INCLUDES ALL PIMA COUNTY

Cities/towns included in Tucson UASI	
Ajo	Pisinemo Trading Post
Arivaca	Rillito
Catalina	Sahuarita
Corona de Tucson	Santa Rita Foothills
Cortaro	Sasabe
Green Valley	Sells
Lukeville	South Tucson
Mount Lemmon	Topawa
Oro Valley	Tucson
Mount Lemmon	Vail
	Why

TABLE 19 - TUCSON UASI CITIES

2.2 Participating Agencies and Points of Contact

It has been the state's policy to include state, local, federal, tribal, NGO and military representatives during this interoperability planning process, which has met with limited success. The Co-Chair of the SIEC, for example, represents an NGO. The Department of Emergency and Military Affairs (DEMA) is composed of the Arizona National Guard and civilians who have played an important role in the planning process. Other commissioners and committee members represent other disciplines. It is Arizona's policy to continue to invite and include all disciplines in all phases of the SCIP process.

The PSCC Support Office is responsible for sending out over 400 email invitations to attend PSCC and SIEC meetings. The distribution (based on domain name search) include:

- 15 state agencies
- 42 local government agencies
- 8 tribal nations
- 5 federal government agencies
- 2 educational entities
- 10 fire districts
- 3 medical delivery serivce providers
- 5 law enforcement agenices
- 16 private companies

- 2 utilities

This email distribution list represents well over 80% of the state's population.

Table 17 below identifies the agencies and individuals that assisted Arizona in developing Arizona's SCIP by their attendance and participation in this review process.

Agency Name	Agency POC	POC Email	POC Telephone (s)
AZ Department of Public Safety	Kevin A. Rogers	karogers@azdps.gov	(602) 223-2260
AZ Public Safety Communications Commission	Curt Knight	cknight@azdps.gov	(602) 223-2257
AZ Public Safety Communications Commission	Jeff Miner	jminer@azdps.gov	(602) 271-7403
Phoenix Police Department	Jesse Cooper	jesse.cooper@phoenix.gov	(602) 534-0315
City of Yuma	Greg Wilkinson	greg.wilkinson@ci.yuma.az.us	(928) 373-4902
Guardian Medical Transport	Mark Venuti	mark.venuti@nahealth.com	(928) 773-2145
Phoenix Fire Department	Mike Worrell, Captain	mike.g.worrell@phoenix.gov	(602) 370-5232
Pima County	Larry Sayers	Larry.sayers@pima.gov	(520) 884-5367
Sedona Fire District	Dan Wills	dwills@sedonafire.org	(928) 300-0137
Arizona Department of Health Services	Ken Leighton-Boster	LEIGHTK@azdhs.gov	(602) 364-3589
AZ State Forestry	Jon Huish	jonhuish@azstatefire.org	(602) 255-4059
Springville Police Department	Steve West	spd@springville.com	(928) 333-4340
Yuma County Sheriff's Department	Leon M. Wilmot	Leon.wilmot@co.yuma.az.us	(928) 783-4427
GITA	Joyce Raschiatore	jraschiatore@azgita.gov	(602) 364-4976
AZ Dept of Lands, Forestry Div	Dale Brown	dalebrown@azstatefire.org	(602) 255-4059

Agency Name	Agency POC	POC Email	POC Telephone (s)
City of Mesa	Mike Dieffenbaugh	Mike.dieffenbaugh@cityofmesa.org	(480) 644-2805
Gilbert Fire Department	Vies Kemp	wesko@ci.gilbert.az.us	(480) 997-5819
Town of Gilbert	John Glorioso	John.glorioso@ci.gilbert.az.us	(480) 503-6335
Motorola	Andy Lacey	Andrew.lacey@motorola.com	(480) 732-6119
Phoenix Police Department	Jesse W. Cooper	Jessse.cooper@phoenix.gov	(602) 534-0315
Federal Engineering	John Murray	jmurray@fedeng.com	(703) 946-3626
Coconino County Sheriff's Department	Cathy Allen	callen@coconino.az.gov	(928) 226-5017
Tyco Electronics	Steve Howard	howardst@tycoelectronics.com	(480) 839-2500
Pinal County Emergency Management	Pete Weaver	Pete.weaver@co.pinal.az.us	(520) 866-6415
AZ Department of Health Services	Ken Leighton-Boster	leigutk@azdhs.gov	(620) 369-3589
Pima County Sheriff's Department	Paul Wilson	Paul.wilson@sheriff.pima.gov	(520) 741-4878
AZ Department of Public Safety	Scott Tillman	stillman@azdps.gov	(602) 223-2275
City of Yuma	Greg Wilkinson	Greg.wilkinson@ci.yuma.az.us	(928) 373-4902
AZ Department of Health	Tim Singleton	singleton@azdhs.gov	(602) 364-3881
AZ Department of Health	Robert Evans	evansr@azdhs.gov	(602) 364-3886
Phoenix Fire	Louise Smith	Louise.a.smith@phoenix.gov	(602) 534-4822
Yavapai County Sheriff's Department	Steve Francis	Steven.francis@co.yavapai.az.us	(928) 777-7221
Maricopa County Sheriff's Department	Jesse Locksa	j.locksa@msco.maricopa.gov	(602) 876-1000
AZ Department of Public Safety	Andy Miller	amiller@azdps.gov	(928) 773-3710

Agency Name	Agency POC	POC Email	POC Telephone (s)
Gila River Indian Community	Mark Hill	Mark.hill@gric.nsn.us	(920) 610-7116
Tucson Police Department	Kathleen Robinson	Kathleen.robinson@tucsonaz.gov	(520) 791-4441
La Paz County Sheriff's Department	Karl Hartmetz	khartmetz@lapazsherigg.orf	(928) 669-6141
Gila County Sheriff's Department	Tom Melcher	tmelcher@co.gila.az.us	(928) 474-2208
AZ DEMA/ADEM	Ryan Goosley	Ryan.goosley@azdema.gov	(602) 231-6342P
Pinal County	Jay Vargo	Jay.vargo@co.pinal.az.us	(520) 866-6336
City of Case Grande	Mike Brashier	mikeb@ci.casa-grande.az.us	(520) 421-8711
Northrop Grumman	Woody Dyche	wsyche@aol.com	(505) 975-2275
Motorola	Andy Lacy	Andrew.lacey@motorola.com	(480) 732-6119
Pinal County	Curt Fonger	Curtis.fonger@co.pinal.az.us	(520) 866-5136
Mesa Fire Department	Bruce McGregor	Bruce.mcgregor@cityofmesa.org	(480) 644-3542
Motorola	Mark Bare	Mark.bare@motorola.com	(480) 732-2410
Motorola	William Fleming	William.fleming@motorola.com	(480) 718-9929
Motorola	Michael Paz	Michael.paz@motorola.com	(480) 732-6147
City of Peoria	Carl Reitz	Carl.reitz@peoriaaz.gov	(623) 773-7508
Public Safety Communications Commission	Marcus Aurelius	gmarcusa@cox.net	(623) 580-9276

TABLE 20 - PARTICIPATING AGENCIES AND POINTS OF CONTACT

The PSCC and SIEC will continue to seek support and participation from every part of the community of interest, including additional local and tribal government representation and federal military and non-military personnel. It is the state's intent to make the process as inclusive as possible.

Regional Planning and Focus Groups

As mentioned earlier, plans for interoperability started many years before SCIP development began, starting with the PSCC and the multiple studies that were conducted to determine the state of interoperable communications within Arizona. It included a needs analysis of the state and multiple regional interviews. The proposed statewide radio system described in this SCIP is a product of that body of work, conducted over seven years including numerous interviews and questionnaires among consultants, state staff and personnel from most public safety agencies within the state.

Those who participated in this planning effort are largely responsible for its implementation, as a successful emergency response begins and ends with local responders. Having these key components will make the Arizona SCIP successful.

The PSCC

In addition, the Governor's Office created the PSCC and the legislature codified its existence in Arizona statute. The appointed members represent a variety of agencies and disciplines. The current commissioners of the PSCC are:

- David Felix, Deputy Director, Arizona DPS (Chair)
- Ray W. Allen, Assistant Chief, Tucson Fire Department
- Marcus Aurelius, Emergency Management Coordinator, City of Phoenix
- Amy Brooks, Captain, Apache Junction Fire Department
- Hal Collett, Sheriff, La Paz County / Arizona Sheriffs Association
- Mike Brashier, City of Casa Grande
- Jan Hauk, President, Arizona Fire District Association / Buckeye Valley Fire District
- Richard Miranda, Chief, Tucson Police Department
- Tracy L. Montgomery, Assistant Chief, Phoenix Police Department
- Leesa Berens Morrison, Director, Arizona Department of Homeland Security
- Dora Schriro, Director, Arizona Department of Corrections
- Danny Sharp, Chief, Oro Valley Police Department
- Dan Wills, Battalion Chief, Sedona Fire District
- Dewayne Woodie, Fire Chief, Ganado Fire District
- Michael Worrell, Captain, Phoenix Fire Department

2.3 Statewide Plan Point of Contact

The state of Arizona has designated Mr. Curt Knight as its official POC. Mr. Knight is a full-time

coordinator for the statewide interoperability plan, and the state anticipates establishing the full-time position of Interoperability Coordinator in the future. As a cornerstone for this position and its responsibilities, please see Appendix C, *Statewide Interoperablity Coordinator: A Key to Success in Developing and Implementing Statewide Interoperability*, April 2007, prepared by DHS. This position will be at the "project manager" level and will be filled when funding becomes available. The current POC's contact information is:

Mr. Curt Knight
Executive Director
Public Safety Communications Commission
Mail Drop 3450
PO Box 6638
Phoenix, Arizona
Telephone: 602.271.7400
Email: cknight@azdps.gov

2.4 Scope and Timeframe

This SCIP provides an approach to achieve interoperability for Arizona's public safety radio system users. It provides for short- and long-term solutions to permit communications among public, private, commercial and non-profit, state, county, local, tribal and federal entities.

Critical In- Scope Components

This plan identifies the need for an interoperability governance structure under the PSCC's leadership. It shows the state's progress by developing the AIRS network. It also describes the ultimate solution, a standards-based, common-infrastructure radio system providing communications for all state, local, tribal, and federal participating agencies. The plan also allows for integrating existing systems and for linking the AIRS network to permit communications with non-participants and transient agencies (which may be agencies, including non-governmental entities that come into the area to provide mutual aid or assistance).

What is Out of Scope

PSCC's guidance has made the statewide interoperability scope very clear: components may be either part of the new statewide radio system, including highlevel network connections to the statewide interoperability radio system or part of the AIRS network. Working together, these systems ensure interoperability among state-level organizations and all jurisdictions operating within its borders.

Any system that does not have a way to connect with the statewide radio system or does not enable connectivity via AIRS is out of this plan's scope, as it only serves one agency or system.

Strategic Initiatives

The statewide plan's implementation schedule will be discussed in depth in Section 6.0 of this document. Contained in the Implementation Plan are a series of strategic initiatives that are designed to focus the statewide system. Included in the initiatives are: completing a demonstration project, completing the AIRS project, completing a statewide microwave system, and finally completing the 700 MHz radio system component of the statewide interoperability solution itself. As part of the PSIC funding, a strategic technology reserve will be implemented in Arizona to augment what is already in place, and provide the additional equipment the state needs today and for the foreseeable future.

Timeframe for Initiatives

In 2008, three projects are scheduled for completion; the first phase of the statewide microwave system, the AIRS build-out, and the demonstration project. In 2011, the second phase of the statewide microwave system is scheduled to be completed, along with the first phase of the 700 MHz radio system. In 2013, the final phase of the statewide microwave system will be completed as will the 700 MHz radio system component of Arizona's statewide interoperability solution**.**

The plan calls for accomplishing several strategic initiatives: SCIP completion and adoption, Governance, Planning, Technology, Training, and System Replacement. An implementation schedule has been created, allowing for continued on-going AIRS implementation, which will be supported indefinitely. The first dates achieved in the timeframe will be the completion and adoption of this SCIP, which is scheduled to occur in late 2007. The short-term strategy encouraging pursuit of opportunities created by the PSIC grant process and continued build-out of the AIRS network is scheduled for the next two to three years. The Governor's mandate to achieve interoperability for 85% of the population is within the next two years is incorporated in the schedule.

The deployment of the long-term strategy, which is the design, construction and implementation of the PSCC long-term solution of a new 700-800 MHz digital trunked statewide radio system, is to be completed by January 1, 2013. Additional information is available in Section 5.

3.0 METHODOLOGY

Arizona has made a concerted effort to plan its achieve interoperability using an all-inclusive manner approach which started with an *ad hoc* group of like-minded individuals who had a vision of interoperability in Arizona. The Public Safety Communications Committee (PSCC) began discussing the future of interoperable communications for the state with representatives of the public safety community of interest in 2001. A strategy started to emerge for interoperable communications. In 2004, the state Legislature established the PSCC as a Commission and the Governor appointed commissioners. As of July 2007, many of the original *ad hoc* committee members are now commissioners and remain active on the PSCC. Additional appointees have established the Commission's broad range of representation from jurisdictions, geography, and public safety disciplines and interests groups from across the state. The Commission has met regularly since early 2001, with meetings attended by all disciplines and levels of government, including representation from state, county, city, district, tribal, and federal as well as any interested party and non-governmental entity. This approach has allowed and encouraged local government and non-governmental organizations to participate in the interoperable communications planning process. Local representatives take an active role in the PSCC and SIEC and their sub-committees by participating in meetings, holding committee positions such as Chairing a committee, and drafting reviewing and editing several sections of this Plan.

The PSCC sponsored or participated in several consultant studies to help define its interoperable communications requirements in Arizona. The studies have included a needs assessment study, an interoperability gap study (by DEMA), and an ongoing system design and implementation project. The PSCC's requirements and future direction have been derived from a sound analysis of public safety operational needs and philosophy established early on by the Commission in its *Concept of Operations* document published in October 2005. (The *Concept of Operations* document may be accessed at

http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf.)

The information used to populate the Plan has been gathered through meetings, interviews, and document review. These documents and interviews represent all agencies operating in the state and further consider all public safety disciplines and all levels of government. Cross-jurisdictional and cross-discipline participation have been achieved in several ways. First, state, county, city, district, tribal, and federal agency representatives have attended PSCC meetings. In addition, practitioners at all levels of government have been interviewed. Another example of multijurisdictional-multidiscipline cooperation and collaboration in the

Arizona interoperable communication effort is the AIRS plan, which includes all public safety disciplines in all levels of government.

The Project Team reviewed the bodies of work done by the PSCC in previous years, which included:

- A study conducted by RCC where they identified the need to create a interoperability suite of radios (AIRS)
- A statewide Needs Analysis, conducted by the Macro Corporation
- The *Concept of Operations* composed by Gartner

The SCIP process started with a high-level plan introduced at a statewide meeting in July 2007. As the state already had a vision for a statewide interoperable communications system, a first draft of the SCIP was prepared in preparation for the meeting. The meeting was facilitated by representatives of the ICTAP, who also critiqued the plan.

In August 2007, the PSCC engaged a team of contractors to assist with developing the SCIP. The first meeting with members of the SIEC was held to discuss the plan and to obtain additional information from the Committee. An updated plan was sent to ICTAP who provided its feedback to the PSCC. Copies of the draft SCIP were placed on a Website and the community of interest was asked to review, and comment on the plan.

Thereafter, two additional forums were conducted, one in September and another in October 2007. These public meetings were advertised, and open to any interested party. After each meeting, edits to the SCIP were made and placed on the Website to ensure it was available to the largest audience possible for review.

The mailing list for the PSCC and SIEC includes over 400 names and represents

- 15 state agencies
- 42 local government agencies
- 8 tribal nations
- 5 federal government agencies
- 2 educational entities
- 10 fire districts
- 3 medical delivery serivce providers
- 5 law enforcement agenices
- 16 private companies
- 2 utilities

- There are several entities whose identity in unknown as this survey only used a domain name search of email addresses.

3.1 PSIC-Grants Considered in Support of Statewide Planning

As outlined in Section 7 of this plan, all funding through this PSIC grants will be in support of the statewide communications plan. This will be accomplished by creating an *ad hoc* committee whose job it will be to review all grant applications to ensure that only those in compliance with the statewide plan are considered. Section 5.1 describes the initiatives that are the highest priorities for 2007 PSIC funding, including the expansion of the strategic technology reserve for statewide interoperability.

3.2 Continued Plans for Local Government Input

The SCIP is a dynamic, living document. It was created with local, tribal and federal entity input, and it will survive only with continued regular input. The SCIP will be reviewed not less than once a year, but will be reviewed more often if there is a significant change in technology, or direction of the PSCC. The process for SCIP review is outlined in section 5.6 of this document.

3.3 Consideration of TIC Plans

As the Phoenix TIC Plan was created prior to this plan, a review was performed to ensure the plans made by the Phoenix UASI and the state of Arizona do not conflict with each other. This review indicated that the Phoenix UASI and the state plans are in fact complementary of each other, as both deploy a P-25, standards-based radio system. While Phoenix uses an 800 MHz system and the state will deploy a 700 MHz system, both systems will be fully interoperable, as the newer 800 MHz systems are both 700 and 800 MHz compatible. The Tucson UASI is also planning to deploy an 800 MHz Project 25 radio system. The statewide radio system will have the capability of linking to each of these radio systems and creating immediate interoperable communications. Additional information can be found in Section 2.1.3 of this document.

Tucson does not have a TIC Plan, so no review took place. The PSCC and SIEC informed the Tucson UASI of the statewide plan and members of the Tucson UASI are also members of the PSCC and SIEC, so in the event the Tucson UASI were to create a TIC Plan, they would be able to review the current Arizona SCIP.

4.0 CURRENT STATEWIDE ASSESSMENT

In an effort to create an assessment of Arizona to use as a baseline to indicate the state's level of interoperability, we used the SAFECOM Interoperability Continuum, Figure 10, below.

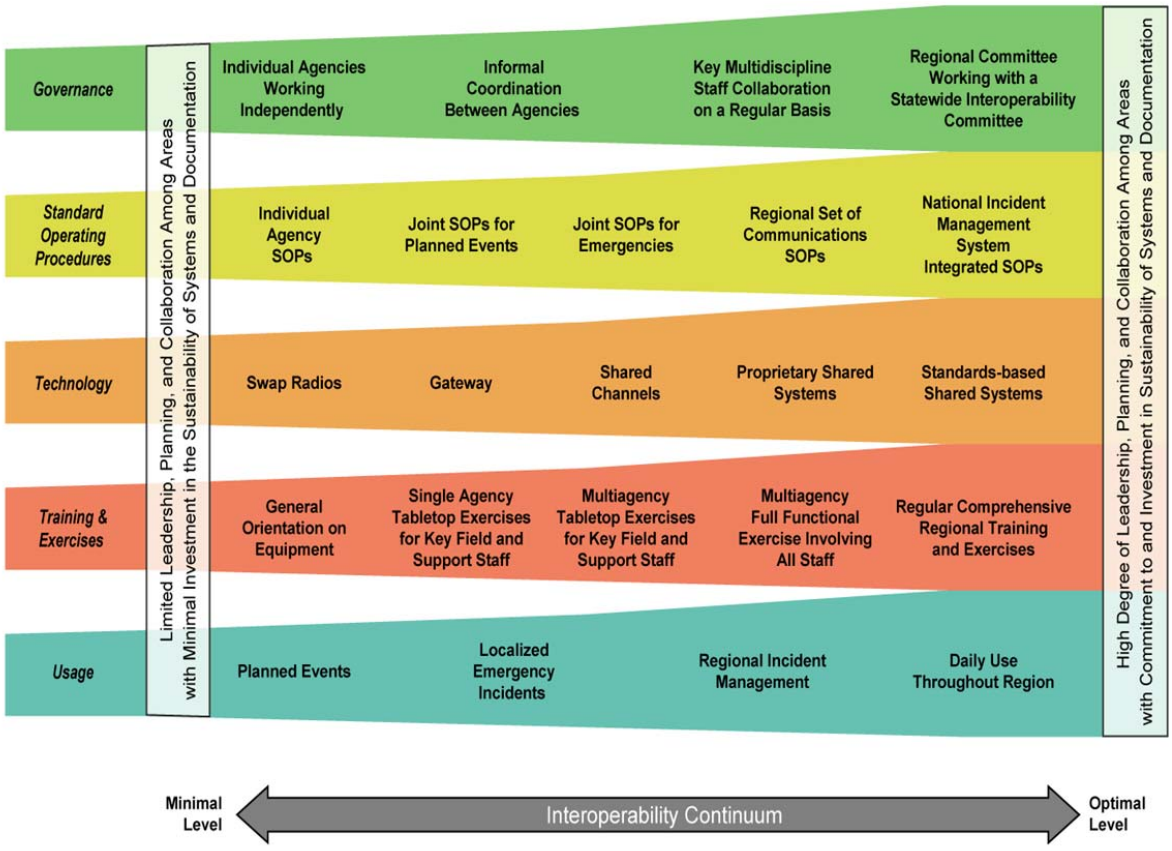

FIGURE 10 - SAFECOM CONTINUUM[11]

4.0.1 GOVERNANCE

The state has a legislatively-enabled PSCC that is charged with oversight of statewide interoperability. They, along with the SIEC and the working groups they share, give Arizona the highest possible level of governance when using the SAFECOM Continuum as a baseline.

4.0.2 SOPS

All SOPs in the state are NIMS-compliant and are integrated into MOUs. To that extent, the

[11] http://www.safecomprogram.gov/SAFECOM/Tools/Continuum/continuum.htm

state also achieves the highest possible rank on the SAFECOM Continuum. However, SOPs for the most part are local government-driven, with relatively few that reach the state level of operations. As SOPs are local, they are therefore regional and follow the Governor's Executive Order EO2005-08 to comply with NIMS.

4.0.3 TECHNOLOGY

Today, interoperability varies from agency to agency and from user to user. Most agencies, though, have AIRS (or its predecessor the Interagency Arizona Radio System (IARS)) channels in their radios, meeting the "Shared Channels" level of the SAFECOM Continuum. Most counties in Arizona also have "gateway" units, either mobile or at communications centers where dispatching takes place or at EOCs, meeting the "Gateway" interoperability definition. Fire services and law enforcement agencies have caches of radios to exchange during special operations, large wildfires, or task force operations, meeting the "Swap Radios" SAFECOM Continuum interoperability level.

In the Phoenix-Mesa metropolitan area and in Yuma County, 800 MHz Project 25 systems provide "Standards-based Shared Systems"-level interoperability. Pima County is moving to a standards-based shared system as well.

Yavapai County has shared dispatch for all police and fire agencies, meeting the "Gateway" interoperability level. Yavapai County's goal is to provide a "Standards-based Shared System" for every agency wishing to participate in their new system, with "Gateway" and "Shared Channels" levels provided as alternatives.

The state of Arizona is currently interoperable with most other jurisdictions through the AIRS suite of interoperability channels. This provides a rudimentary level of interoperability, as it allows one talk path for emergency operations in any area of the state. AIRS requires dispatcher control to activate the stations. According to the SAFECOM Continuum, this level of interoperability is considered "Shared Channels," however AIRS is limited to a single channel per region. Arizona is looking to the future, creating a fully interoperable 700 MHz standards-based Project 25 radio system that will enable all emergency responders to communicate with each other when required and in real time (without the interaction of a dispatcher). Once the 700 MHz system is deployed as a component of the state's solution, the interoperability level will become the "Standards-Based, Shared Systems" as defined in the Continuum.

With respect to planning authority over the 700 MHz frequencies, the Regional Planning Committee (RPC) in Arizona has responsibility for the general use channels and is chaired by Mr. Mark Schorder, APCO Chair. The Interoperability channels fall under the authority of the SIEC, as does the VHF and UHF interoperability frequencies. The state's 700 MHz frequencies fall under the authority of the DPS, Mr. Curt Knight.

4.0.4 Training and Exercises

Arizona has an extensive training program that crosses all jurisdictions and is multi-disciplinary. The training program is cyclic, thus creating a plethora of training opportunities for all state, local, and tribal entities. The state will be participating in the TOPOFF-4 (TOPOFF is a Top Officials exercise to test readiness) exercise and observed the TOPOFF-3 exercise. Because of these extensive training and outreach programs, Arizona has achieved the highest training and exercises rating possible using the SAFECOM Continuum.

4.0.5 Usage

AIRS is used routinely by many jurisdictions. Because of the technology used in AIRS, there is no way to gather usage statistics, however. When surveying local law enforcement responders, they advise they use it when they need it, but could not give any details regarding how often they access it. We do believe however, the use of AIRS is more often for localized emergency incidents then regional interoperability. As AIRS is still being constructed throughout the state, we believe that its use will increase as its availability increases.

4.0.6 Interoperability Challenges

In additional to the "normal" challenges for interoperable communications: money, governance, and technology, the state faces several unique challenges. The size and terrain of the state present special challenges, and the fact that a large area of the state is uninhabited presents additional challenges not normally experienced by most states. These two factors increase the fiscal impacts of a statewide interoperable radio system substantially. As with all other statewide systems, cost and governance are always problematic. In Arizona, the PSCC takes the governance lead and has done so for the past seven years. This group is generally well-trusted by most public safety officials in the state. However, the PSCC must continue to garner support for their efforts from a tax base that is, like in many states, decreasing.

4.0.7 Developing Technology and Initiatives

To remedy existing interoperability shortfalls, the following key strategies have been adopted:

AIRS deployment—The state has been building out the AIRS radio network, based on IARS. Originally planned and built in the early 1980s, IARS served the law enforcement community by providing VHF and UHF base stations at key locations. These stations could be linked together to allow VHF users to communicate with UHF users. As the system developed, some sites were also equipped with 800 MHz repeaters. 17 sites were in operation in 2005, as shown in Table

21 below.

The IARS concept was modernized and expanded using DHS funds in 2006 and 2007, becoming AIRS. Where IARS had only VHF and UHF stations at each site, AIRS uses base station "suites" composed of one wideband VHF, one narrowband VHF, one UHF, and one 800 MHz base stations/ repeaters. Like AIRS, each radio is connected to a dispatch center via a microwave system.

The original IARS implementation had each radio controlled separately by the dispatch center. AIRS was being implemented before the state microwave system upgrade was complete, and there was not enough microwave channel capacity to control each of the four radios in all the suites individually. Therefore, most of the sites are currently wired to connect the wideband VHF, the UHF, and the 800 MHz radios together, so that what is received by one station is retransmitted by the other stations. This "cross-band repeater" configuration requires only one control channel per suite (or per site) to control it from dispatch.

There were approximately 40 sites selected for AIRS implementation. Of these 40 sites, 21 are installed and operational and seven are in progress of being installed and made operational. Another 13 are warehoused by the state and will be installed as funding becomes available. An additional four suites are needed for four other sites when funds become available to purchase them. The AIRS system requires not only additional funds for installing the additional suites, but the state microwave system requires upgrading and receiver voter, antenna combining, and console control equipment are required to make it fully operational as designed.

COUNTY	SITE	MONITORED BY	COMMENTS
Apache	Greens	Navajo S.O.	
Cochise	Mule Mtn	Cochise S.O	backup at Tucson DPS
Coconino	Mt. Elden	Coconino S.O.	
	Bill Williams Mtn	Coconino S.O.	
Gila	none		
Graham	Heliograph Peak		backup at U of AZ P.D.
Greenlee	Guthrie Peak		backup at Tucson DPS
La Paz	none		
Maricopa	South Mountain	Maricopa S.O.	part of MCSO system

COUNTY	SITE	MONITORED BY	COMMENTS
	White Tanks Mtn	Maricopa S.O.	part of MCSO system
	Thompson Peak	Maricopa S.O.	part of MCSO system
	Towers Mtn	Maricopa S.O.	part of MCSO system
Mohave	Hualapai Mtn	Mohave S.O.	
Navajo	Greens Peak	Navajo S.O.	
Pima	none		
Pinal	none		
Santa Cruz	Nogales Hill	Santa Cruz S.O.	backup at Tucson DPS
Yavapai	Towers Mtn	Maricopa S.O	part of MCSO system
Yuma	Telegraph Pass	Yuma S.O.	
	Oatman Mtn.	Yuma S.O.	
Childs Mtn.	Yuma S.O.		

TABLE 21- IARS RADIO SITES IN 1995[12]

The currently installed interoperability suites are located as indicated in Table 22.

MOHAVE	*SANTA CRUZ*	*PIMA*	*MARICOPA*
Christmas Tree	Nogales Hill	Mt Lemmon	White Tanks Mountain
Willow Beach	***YAVAPAI***	Keystone	South Mountain
Haualapi Mountain	Mingus Mountain	***YUMA***	Towers
Lake Havasu City	Juniper	Childs Mountain	Thompson
COCONINO	Squaw Peak	Oatman Mountain	***GILA/PINAL***
Navajo Mountain	***GRAHAM / GREENLEE / COCHISE***	Telegraph Pass	Signal Peak

[12] Table 21 from the 1999 version of the IARS State Plan

Bill Williams	Guthrie Peak	***NAVAJO/ APACHE***
Mt Elden	Heliograph Peak	Piney Hill
Schnebly Hill	Mule Mountain	Greens Peak
		Holbrook

TABLE 22 - AIRS SUITES[13]

The radio coverage provided by AIRS is shown in the following maps (Figures 11 and 12). The first and third maps show the current coverage from the 28 sites in service on VHF and 700/800 MHz. The second and fourth maps show what is to be expected if 13 sites are added in key areas on the two radio bands (Figures 13 and 14).

[13] Table 22 from the 1999 version of the IARS State Plan

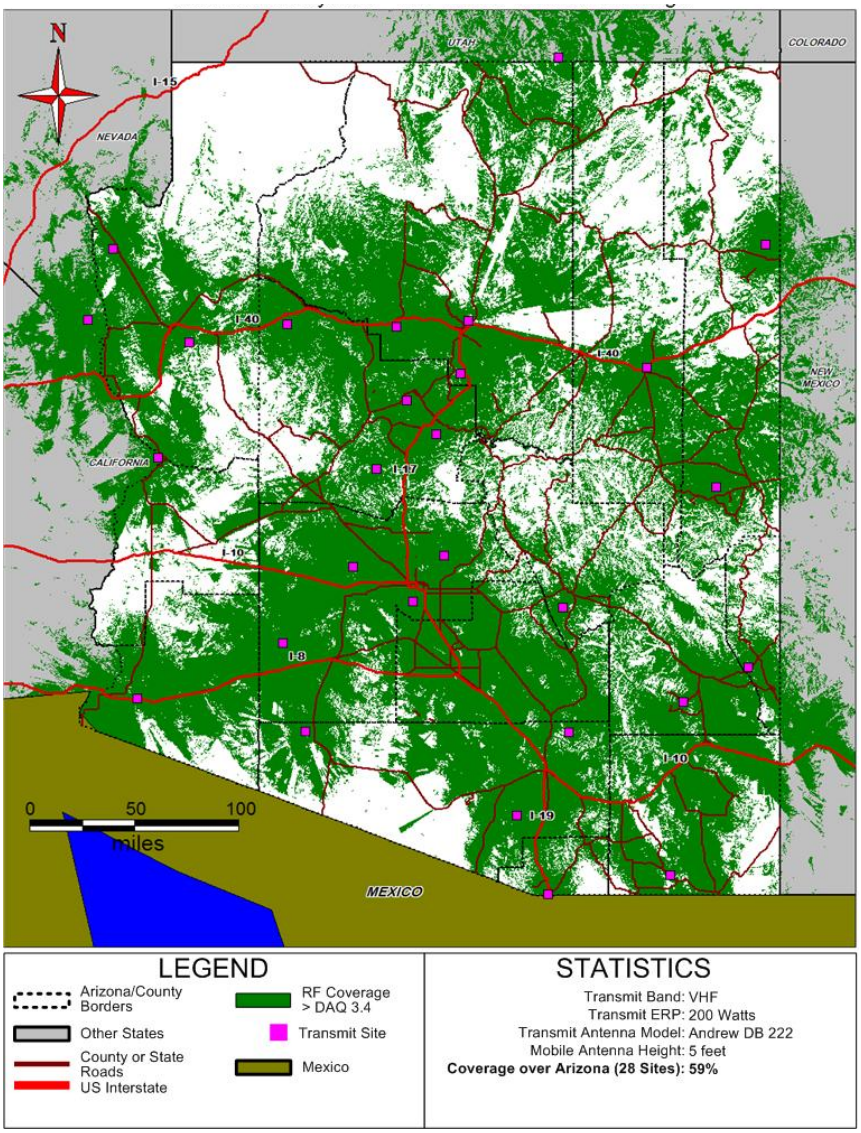

FIGURE 11- CURRENT AIRS SYSTEM - VHF MOBILE TALK-OUT COVERAGE

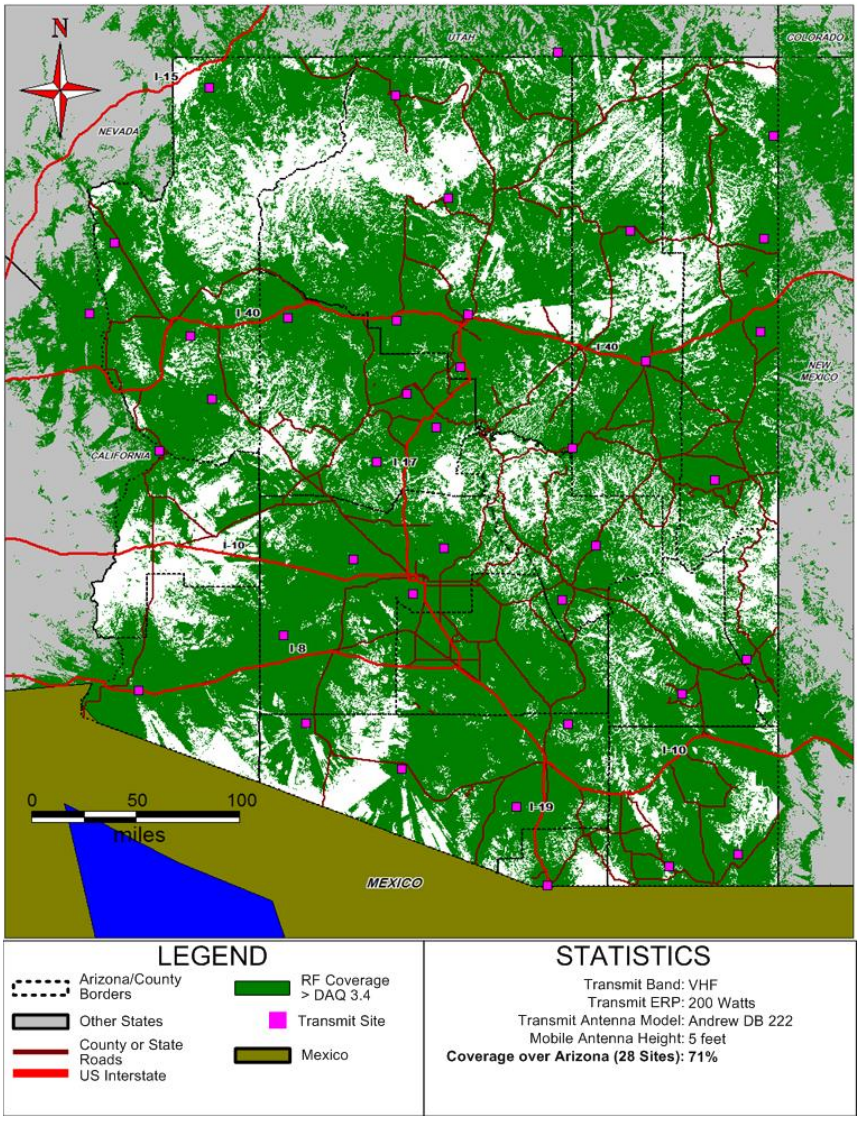

FIGURE 12- FUTURE AIRS SYSTEM VHF MOBILE TALK-OUT COVERAGE

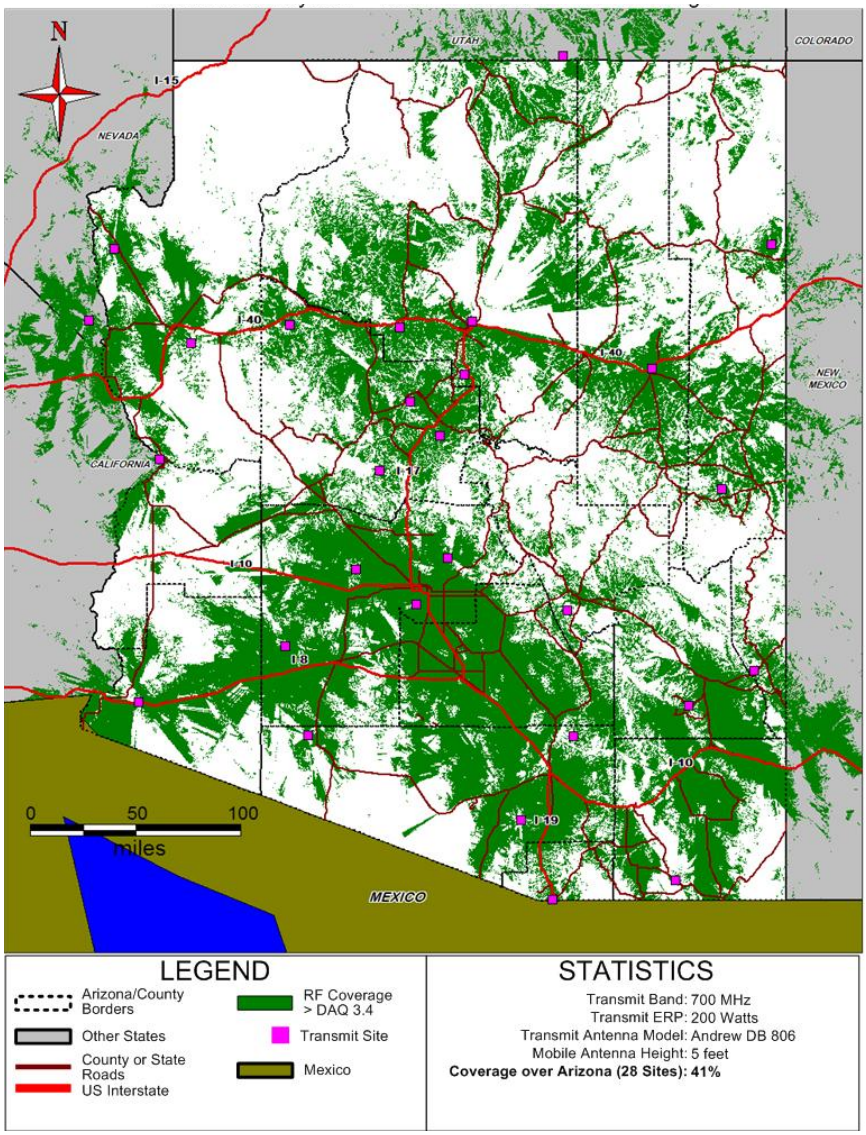

FIGURE 13- CURRENT AIRS SYSTEM 800 MHZ MOBILE TALK-OUT COVERAGE

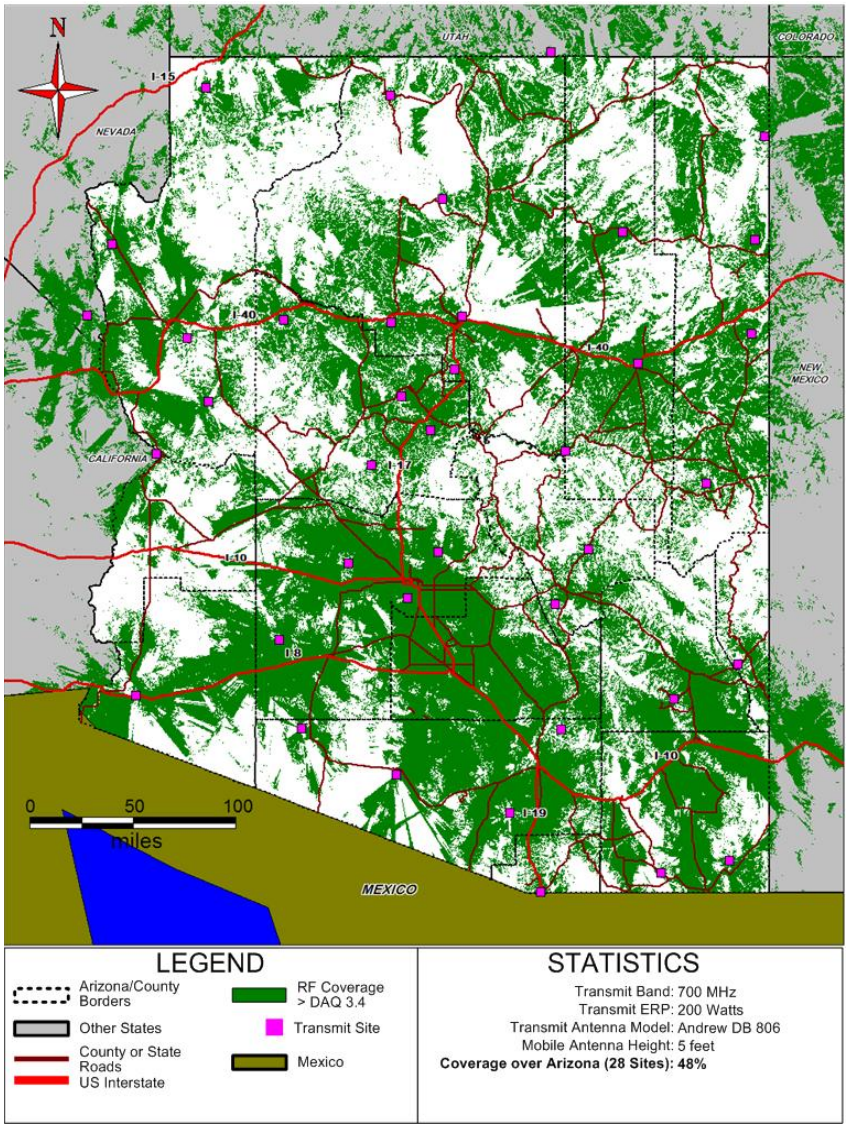

FIGURE 14- FUTURE AIRS SYSTEM 800 MHZ MOBILE TALK-OUT COVERAGE

The PSCC and SIEC have issued standards and plans outlining how the AIRS channels should be placed into agency radio units as well as the recommended features and capabilities for all future radio purchases. (The *AIRS Plan* can be accessed at http://www.azdps.gov/pscc/documents/AIRSPolicy.2.2.07.pdf.)

Frequency Agile Gateways— Most, if not all, of the counties have radio gateway units. A gateway, also known as a "matrix switch," allows a radio on one channel to be connected to a radio on another channel, effectively "patching" the communications of the two channels together. The units (including the switch and the radios) supplied by the state were mounted in mobile vans or installed at fixed locations.

State Microwave System Upgrade— The state's current microwave network has evolved over the last fifty years to interconnect radio sites located across Arizona with dispatch centers and other facilities. The current system is composed of 84 paths, each connecting two locations. These links range in length from a few miles to over 130 miles, with an average of about 42 miles. In total, the links add up to 3,562 miles, or the distance from Washington, D.C. to Phoenix and back.

The microwave network is used mostly to control radio base stations at remote communications sites as described above and may be used to carry computer data and telephone signals. The state of Arizona microwave network connects 57 remote sites with 19 facilities.

Although built primarily to support the Arizona DPS radio system, many agencies use some portion of its capacity. Some of these agencies are listed in Table 23 below:

State agencies using microwave backbone		
AZ Highway Patrol	Dept of Agriculture	Governor's Security
ADOT Maintenance	NOAA/Weather Service	ADOT Construction
AZ Game & Fish	State Land & Forestry	State Parks
Dept of Corrections	Capitol Security	Army National Guard
Dept of Emergency Management	Drug Enforcement Agency	ADOT Motor Vehicles Division
Federal Bureau of Investigation	Every County in Arizona	Bureau of Land Management
Yavapai Fire District	US Coast Guard	Sedona Fire District
US Army Proving Ground	DPS Criminal Investigations	AZ EMS Communications

TABLE 23- STATE AGENCIES USING MICROWAVE BACKBONE

Currently, about 13 microwave links have been upgraded to digital paths, connecting approximately 19 sites and facilities.

Figure 15 shows the existing microwave system. A more detailed and clearer designed map is available to authorized personal by contacting the Arizona SPS, Wireless Systems Bureau, Phoenix, Arizona.

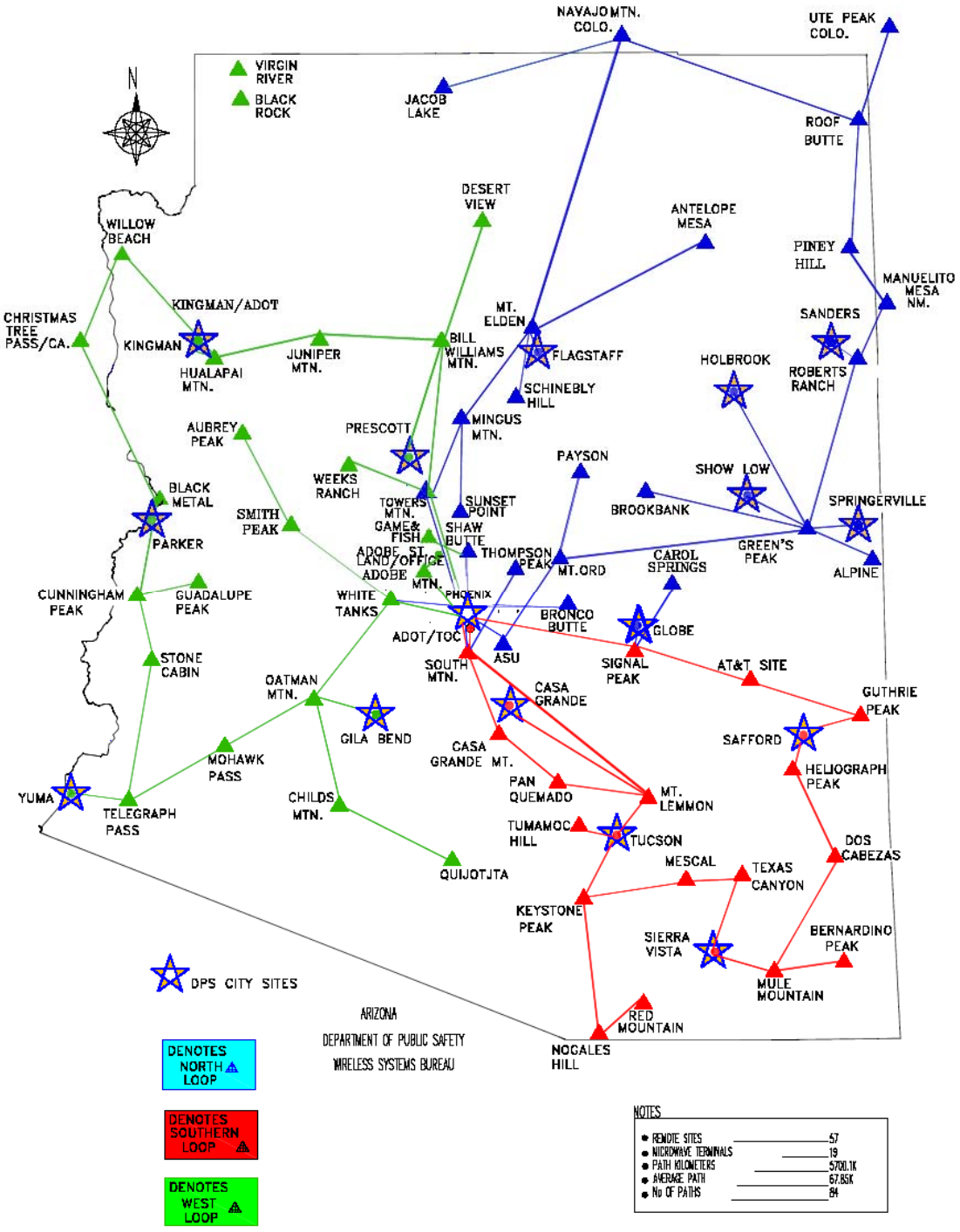
NAVAJO MTN. COLO.
UTE PEAK COLO.
VIRGIN RIVER
BLACK ROCK
JACOB LAKE
ROOF BUTTE
DESERT VIEW
ANTELOPE MESA
PINEY HILL
MANUELITO MESA NM.
WILLOW BEACH
KINGMAN/ADOT
CHRISTMAS TREE PASS/CA.
KINGMAN
HUALAPAI MTN.
JUNIPER MTN.
BILL WILLIAMS MTN.
MT. ELDEN
FLAGSTAFF
SCHINEBLY HILL
SANDERS
ROBERTS RANCH
HOLBROOK
MINGUS MTN.
AUBREY PEAK
PRESCOTT
WEEKS RANCH
PAYSON
SHOW LOW
BLACK METAL
PARKER
SMITH PEAK
TOWERS MTN.
GAME& FISH
SUNSET POINT
SHAW BUTTE
BROOKBANK
SPRINGERVILLE
ADOBE ST LAND/OFFICE
ADOBE MTN.
THOMPSON PEAK
MT.ORD
CAROL SPRINGS
GREEN'S PEAK
ALPINE
CUNNINGHAM PEAK
GUADALUPE PEAK
WHITE TANKS
PHOENIX
BRONCO BUTTE
GLOBE
ADOT/TOC
ASU
SOUTH MTN.
SIGNAL PEAK
AT&T SITE
STONE CABIN
CASA GRANDE
GUTHRIE PEAK
OATMAN MTN.
GILA BEND
SAFFORD
CASA GRANDE MT.
HELIOGRAPH PEAK
MOHAWK PASS
PAN QUEMADO
MT. LEMMON
YUMA
TELEGRAPH PASS
CHILDS MTN.
TUMAMOC HILL
TUCSON
DOS CABEZAS
QUIJOTJTA
MESCAL
TEXAS CANYON
KEYSTONE PEAK
SIERRA VISTA
BERNARDINO PEAK
MULE MOUNTAIN
RED MOUNTAIN
NOGALES HILL
DPS CITY SITES
ARIZONA
DEPARTMENT OF PUBLIC SAFETY
WIRELESS SYSTEMS BUREAU
DENOTES NORTH LOOP
DENOTES SOUTHERN LOOP
DENOTES WEST LOOP
NOTES
REMOTE SITES 57
MICROWAVE TERMINALS 19
PATH KILOMETERS 570.1K
AVERAGE PATH 67.85K
No OF PATHS 84

FIGURE 15- STATE MICROWAVE MAP[14]

Statewide Land Mobile Radio System— As discussed previously, through its various studies the PSCC has decided to install a statewide radio system to serve all public safety entities. The design calls for a 700 MHz system employing Association of Public-Safety Communications Officials (APCO) Project 25 digital technology. The system will reuse the 96 channels available for state use and will have 74 radio sites providing mobile coverage throughout the state. Most of the sites are owned by the state, with some added contingency sites. The sites will be interconnected by the state microwave system, which must be upgraded from analog to digital technology for it to have the necessary features and capacity.

The sites will have a number of repeaters based on the amount of radio traffic and number of users expected in the area of the site. To meet expected demand, a minimum of six channels and a maximum of 18 channels will be installed at each site.

The statewide system will be interconnected with existing or new local 800 MHz Project 25 systems. The Project 25 Inter-Sub-System Interface (ISSI), is currently under development, and will be used to permit seamless roaming between the state and local systems.

All subscriber units (mobile and portable radios) will be capable of 700 and 800 MHz operation, allowing them to roam among systems in both bands.

This system will provide robust interoperability among participating agencies. By using a common infrastructure, each user will be able to communicate with any other user.

The following map (Figure 16) shows the predicted radio coverage provided by the 700 MHz radio system.

[14] Arizona Department of Public Safety, Wireless Systems Bureau

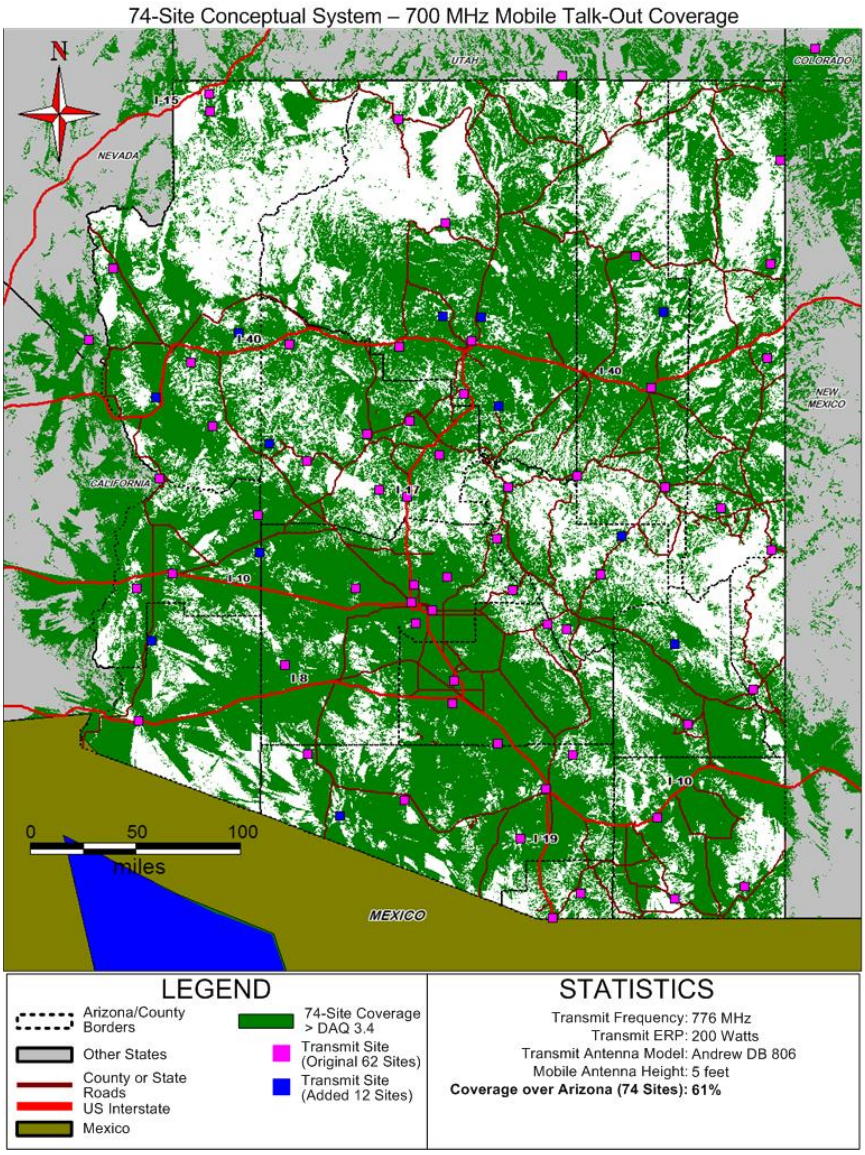

FIGURE 16- 74 SITE CONCEPTUAL SYSTEM 700 MHZ TALK-OUT COVERAGE

Regional System Enhancement— The state encourages local and tribal government agencies to upgrade their radio systems so they are compatible with state systems. All agencies will also be encouraged to participate in the statewide 700 MHz system interoperability component, but the state realizes the 700 MHz system may not meet the needs of all counties and cities. For example, the statewide system, being designed to support the traffic and quantity of users from state agencies for mobile coverage, may not provide enough capacity for local government needs or may not provide adequate indoor portable coverage as required

by a city agency. However, the system's governance will provide methods to enable the local agency to provide additional sites and/or channels where needed to meet their needs. The local agency will benefit from complete interoperability and statewide mobile roaming.

Some non-state agencies may not desire to move to 700/800 MHz, but rather keep operating on their existing system. The statewide system will be expandable to permit either console patching or permanent interconnection with the local system. It is envisioned that the local agency could use one of its existing channels to interface with a 700 MHz talk-group, in which 700 MHz system users and local users would meet on this channel/talk-group to communicate. For this to succeed, of course, the local agency must provide local coverage where needed, and if local units leave their coverage area, this interconnection will no longer function.

All agencies will continue to be encouraged to equip their personnel with AIRS channels, providing further interoperability. Local agencies may also purchase 700 MHz Project 25 mobile or control station radios to allow those mobile users or dispatch centers so equipped to communicate directly with statewide system users.

Demonstration Project— The state will demonstrate the interoperable architecture (organizational and system) that has been identified as the baseline design for the expanded statewide system. Methods to expand current systems for greater coverage will show how government entities can work together to form governance agreements. The demonstration project will also show how completely separate radio systems can be interconnected to permit continuous radio coverage over large portions of the state. The demonstration project will include four components:

- Provide state personnel radios to be used on the Phoenix-Mesa metro 800 MHz system, demonstrating the interoperable nature of Project 25 systems and validating forms of inter-governmental agreements.
- Building a 700 MHz site on White Tank Mountain to expand the Phoenix-Mesa 800 MHz system coverage west of the metro area and demonstrating the coexistence of 700 and 800 MHz stations in the same system. Governance issues will also be identified as inter-governmental agreements are formed.
- Build a 700 MHz site on Oatman Mountain to expand westward the coverage of the Yuma Regional Communications System (YRCS) 800 MHz network. This will demonstrate 700 MHz in wide-open desert terrain and the coexistence of 700 and 800 MHz systems, and identify governance issues.

- Connecting the Phoenix and Yuma systems together to validate roaming and intersystem communications, as well as additional governance and system management issues.

4.0.8 700 MHz Regional Planning

The 700 MHz RPC is chaired by the chairman of the Arizona Chapter of APCO. The state of Arizona maintains authority and oversight over both the interoperability channels and state-owned frequencies in this spectrum. The RPC applied for and received authority to license the 700 MHz spectrum in Arizona. The statewide regional plan encompasses the entire state as indicated in Figure 18, below.

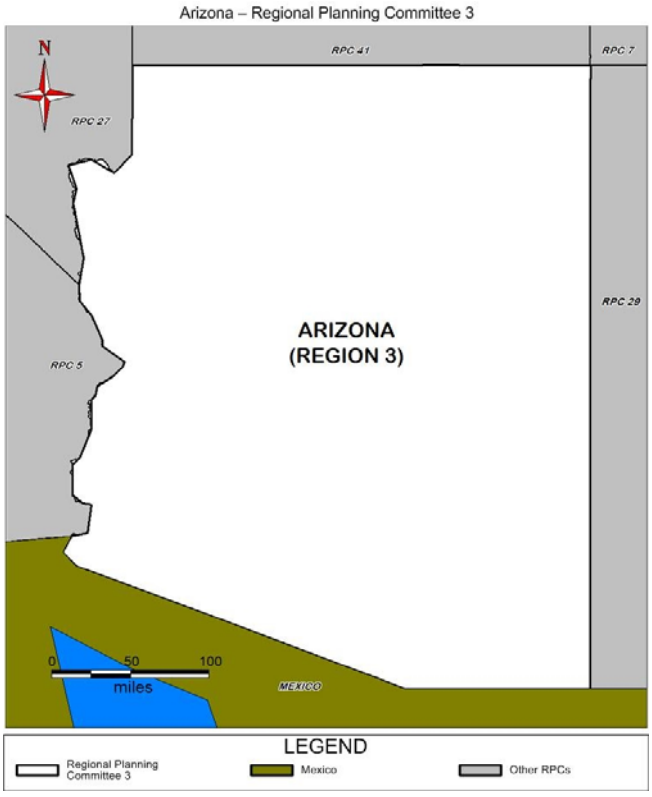

FIGURE 17 - 700/800 REGIONAL PLANNING COMMITTEES

4.0.9 800 MHz Regional Planning

As with the 700 MHz RPC, the 800 MHz RPC is also statewide. The Arizona Chapter of APCO is responsible for the planning and coordination of the 800 MHz channels. Arizona is in Wave-4 of the Rebanding effort and as such, the rebanding effort has not yet begun in the state. The start date for this effort is determined by treaty negotiations between Mexico and the United States. At this time, the date for this process is unknown.

4.0.10 CHANNELS IN USE

Tables 24 and 25 below represent the channels that are used either statewide or regionally for interoperability.

Channels	Base Station TX Frequency	Base Station RX Frequency	Statewide/Regional
AIRSAZ	155.475	155.19	Statewide
AIRS1	155.475	155.19	Regional*
AIRS2	155.475	155.19	Regional*
AIRS3	155.475	155.19	Regional*
AIRS4	155.475	155.19	Regional*
AIRS5	155.475	155.19	Regional*
VAIRS5-D	155.475	155.475	Statewide Direct
AIRSAZ	460.375	465.375	Statewide
AIRS1	460.375	465.375	Regional*
AIRS2	460.375	465.375	Regional*
AIRS3	460.375	465.375	Regional*
AIRS4	460.375	465.375	Regional*
AIRS5	460.375	465.375	Regional*
UAIRS5-D	460.375	460.375	Statewide Direct
AIRSAZ	866.0125	821.0125	Statewide
AIRS1	866.0125	821.0125	Regional*
AIRS2	866.0125	821.0125	Regional*
AIRS3	866.0125	821.0125	Regional*
AIRS4	866.0125	821.0125	Regional*
AIRS5	866.0125	821.0125	Regional*
8AIRS5-D	866.0125	866.0125	Statewide Direct
VCALL	155.7525	155.7525	Statewide
VTAC1	151.1375	151.1375	Regional*
VTAC2	154.4525	154.4525	Regional*
VTAC3	158.7375	158.7375	Regional*
VTAC4	159.4725	159.4725	Regional*
UCALL	453.2125	458.2125	Statewide
UCALL-D	453.2125	453.2125	Statewide Direct
UTAC1	453.4625	458.4625	Regional
UTAC1-D	453.4625	453.4625	Regional Direct
UTAC2	453.7125	458.7125	Regional
UTAC2-D	453.7125	453.7125	Regional Direct
UTAC3	453.8625	458.8625	Regional
UTAC3-D	453.8625	453.8625	Regional Direct
8TAC1	866.5125	821.5125	Regional
8TAC1-D	866.5125	866.5125	Regional Direct

8TAC2	867.0125	822.0125	Regional
8TAC2-D	867.0125	867.0125	Regional Direct

Channels	Base Station TX Frequency	Base Station RX Frequency	Statewide/Regional
8TAC3	867.5125	822.5125	Regional
8TAC3-D	867.5125	867.5125	Regional Direct
8TAC4	868.0125	823.0125	Regional
8TAC4-D	868.0125	868.0125	Regional Direct
8TAC5	866.0375	821.0375	Regional
8TAC5-D	866.0375	866.0375	Regional Direct
Fire Mutual Aid	154.28	154.28	Statewide
AZ Search & Rescue	155.28	155.28	Statewide
• **Regional assignments shown in Appendix A**			

TABLE 24 - EXISTING STATEWIDE OR REGIONAL INTEROPERABILITY CHANNELS

Region	Jurisdiction	Agency	TX Frequency	RX Frequency
Central	Phoenix-Mesa Metro	All	866.5125	821.5125
North	Flagstaff	All	866.5125	821.5125
South	Yuma	All	866.5125	821.5125

TABLE 25 - NPSPAC REPEATERS IN OPERATION AND PROGRAMMED CHANNELS

4.1 GOVERNANCE STRUCTURE

The PSCC was formed to address interoperability issues in the state of Arizona and begin the process of identifying a strategy, proposed solution and funding needed to achieve statewide interoperability. In 2005, Governor Napolitano signed legislation establishing the PSCC. With Commission members appointed by the Governor, the PSCC reflects a broad, multi-disciplinary cpmmunity of public safety and emergency management agencies from across the state. The PSCC is charged with oversight of the statewide plan for an interoperable radio and data network. (Figure 18 is the PSCC's Organizational Chart.)

The Commission has always recognized and stressed the importance of shared joint use radio systems not only for cost control, but more importantly for improved interagency communications (interoperability.) The PSCC Support Office is working to develop and implement/facilitate the Intergovernmental Agreements (IGA) necessary to improve interoperability through co-development and sharing of future and existing systems. By expanding upon existing and developing new partnerships and associated IGAs, Arizona plans to leverage and complement existing and future systems which are closely related to the PSCC's defined path of a 700/800 MHz trunked environment based on the APCO Project 25 standards. The Commission has also made a strong commitment to interagency communication with existing VHF and UHF systems first through the AIRS network of mutual aid channels but also through high-level network connections.

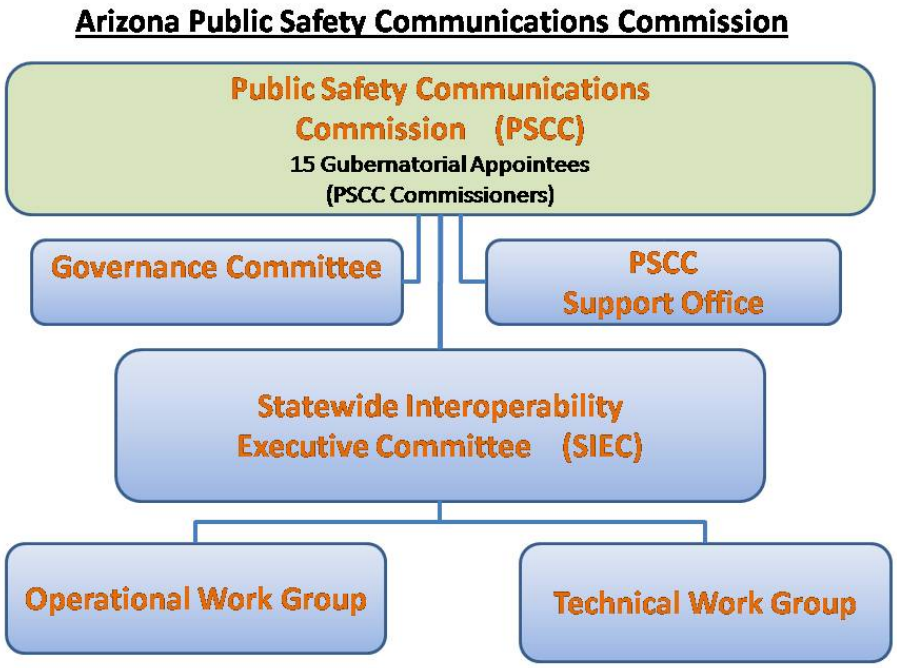

FIGURE 18 - ORGANIZATION CHART ARIZONA PUBLIC SAFETY COMMUNICATIONS COMMISSION

Arizona's state government is in an ideal position to provide leadership and facilitation to ensure radio systems are created around a central plan encompassing cooperation and involve all levels of government. Education to garner support for this approach is essential and must be presented in a non-technical format for elected officials and members of the public. The PSCC *ConOps* was a document developed and approved by the PSCC in part to fulfill this function. (The *ConOps* Report may be accessed online at:

http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf)

Funding limitations restrict most agencies' abilities to implement and/or sustain state-of-the-art radio systems. As part of its oversight, the Arizona PSCC must find a compromise that is palatable to the majority of prospective members. In addition, the PSCC must collaborate with large metropolitan areas (Tucson/Pima County, Phoenix/Mesa) as well as with smaller jurisdictions to strategize how the regional projects in these areas can be incorporated into the statewide plan.

A common theme among the more mature projects is that governance is an evolving process. The current Arizona PSCC provides a good starting place for governance. State government is motivated by the pressing need to replace its aging system. Smaller agencies or those serving rural communities are motivated to participate in developing a new system because they lack the resources to build larger communications networks. The agencies in regional interoperability projects are motivated to achieve interoperability with partner agencies due to operational realities. These same realities create the will to achieve interoperability with developments at the state level. It is essential that potential partner agencies participate in the development of governance and decision making processes to ensure a cohesive and united effort will be successful and maintained.

4.1.1 Public Safety Communications Commission (PSCC)

Vision

The Vision of the PSCC is to "Enable real-time, interoperable communications between local, county, state, tribal, and federal public safety entities in the state of Arizona to effectively protect lives and property.[15]"

Mission

In order to enable real-time, interoperable communications between local, county, state, tribal, and federal public safety entities in the state of Arizona to protect lives and property, the PSCC will:

- Promote the development and use of standards-based systems
- Capitalize on opportunities to share resources
- Apply best practices and lessons learned

[15] Public Safety Communications Commission

- Provide effective, sustainable, and reliable radio communications between local, county, state, tribal, and federal public safety entities

PSCC History

The Arizona PSCC's history is best summerized on its Website and is quoted in this section of the SCIP.

> The Arizona PSCC began as an *ad-hoc* committee comprised of dedicated public safety executives who volunteered their time and energy to addressing the short- and long-term interoperable communications needs for all public safety entities in the state of Arizona. The PSCC was formed in April of 2000 to educate its members and community stakeholders on the critical need for interoperability and to begin the process of identifying funding for this long-term enterprise. PSCC membership has shared one central focus: *to develop a standards-based, shared voice and data radio system that efficiently and effectively addresses the front-line needs of its users to protect life and property.*
>
> The PSCC began meeting on a quarterly basis and established subcommittees to assist in identifying funding and educating the public safety community, general public and elected officials. With the assistance of the Arizona Criminal Justice Commission (ACJC), a federal appropriation earmark was acquired to fund a study of public safety communications systems in use throughout Arizona. This study was the critical first step required before the PSCC could begin developing a conceptual and detailed technical design that would lay in a course for future public safety communication systems in Arizona.
>
> Since September 11, 2001, the national and state focus on homeland security has further emphasized the critical need for radio voice and data technologies to support the public safety "first responders" for the foreseeable future. Current homeland security funding is only a stop-gap measure to improve local interoperability and does not improve upon existing communication infrastructures or inadequate statewide radio coverage.
>
> While all public safety agencies have a need to upgrade communication capabilities to service their specific communities, it became clear that a greater statewide effort was required to address multiple-agency/cross-jurisdictional communications needed during

large-scale events and natural disasters affecting the state. This has evolved into a vision for a modern statewide voice- and mobile-data network, which will support local public safety operations as well as providing a robust statewide infrastructure supporting wide-area coverage for all agencies. This is a long-term, complex and expensive undertaking that requires a high level of accountability, management and operational control to be successful. Planning and managing a system of this size and complexity requires a competent full-time staff with a single focus on statewide system design and implementation.

Today's statewide microwave network and associated state agency radio systems are managed by DPS engineers and technicians. The state-owned microwave network, which could serve as the statewide infrastructure, is badly in need of modernization, which includes transitioning from analog to digital technology. The four-to-five decade-old technologies and concrete and steel infrastructures of Arizona have survived well beyond their anticipated life cycle and are in desperate need of replacement and modernization. Current DPS staffing and funding are inadequate for the proper planning, development, deployment and operational management of any future network that becomes a part of the state's public safety infrastructure. Further, this issue affects all public safety entities working within the state.

Now officially organized as the Arizona Public Safety Communications Advisory Commission (continuing to be known as PSCC), the commission will build upon the work already begun. The PSCC staff will foster, recommend and develop technical standards; oversee conceptual and detailed design efforts; and pursue funding to build out and maintain a statewide system for use by all local, state, tribal and federal public safety entities in Arizona. The PSCC will continue to work closely with its partners to achieve a system design that will meet the needs of all parties. There is much more to be done to reach this goal, and continuing funding to complete designs and construct the system is critical to enable and advance the work already accomplished. [16]

PSCC Membership

The Governor of the state of Arizona appoints 15 members to serve as Commissioners on the

[16] The information on the PSCC was taken from http://www.azdps.gov/pscc/default.asp

PSCC. The terms of these appointments are for 3 years, and the Arizona State Senate must confirm each member, who represent differing disciplines and jurisdictions. Terms of office are offset to ensure a consistent approach in this important role. Currently, the following Commissioners serve in the PSCC:

- Chairman – David Felix, Deputy Director, Arizona DPS
- Ray W. Allen, Assistant Chief, Tucson Fire Department
- Marcus Aurelius, Emergency Management Coordinator, City of Phoenix
- Amy, Brooks, Captain, Apache Junction Fire Department
- Hal Collett, Sheriff, La Paz County / Sheriffs' Association
- Mike Brashier, City of Casa Grande
- Jan Hauk, President, Arizona Fire District Association / Buckeye Valley Fire District
- Richard Miranda, Chief, Tucson Police Department
- Tracy L. Montgomery, Assistant Chief, Phoenix Police Department
- Leesa Berens Morrison, Director, Arizona Department of Homeland Security
- Dora Schriro, Director, Arizona Department of Corrections
- Danny Sharp, Chief, Oro Valley Police Department
- Dan Wills, Battalion Chief, Sedona Fire District
- Dewayne Woodie, Fire Chief, Ganado Fire District
- Michael Worrell, Captain, Phoenix Fire Department

The PSCC was organized in 2000 and has conducted regular meetings since its inception. Meeting intensity has increased in recent years as illustrated by the PSCC meeting calendar below.

2000 – Organized

2001 – October 30; December 06

2002 – January 22; March 26; August 27

2003 – February 25; March 25; June 24; September 23; December 16

2004 – March 23; June 29; October 26

2005- January 11; March 22; May 24; July 26; October 26

2006 – January 24; April 25; July 11; October 24

2007 – January 23; April 24; July 10; August 21; September 25; October 23; November 13; December 11

Charter

The PSCC charter was established in Arizona State Law on July 5, 2004. It is codified under Arizona law 41-1820.41 and 41.1830.42**.** The rules under which the PSCC exist and operate are below in Figure 19

Interoperability Governance Structure

Arizona has a multi-level program to oversee the governance of interoperable communications. The highest levels of state government recognize the criticality of public safety communications and as such, the Governor and legislature have legally empowered the PSCC to oversee the state's efforts. To support the PSCC's work, the state has provided staff, managerial and logistical support through the PSCC Support Office and its Executive Director. Reporting to the PSCC is the SIEC and its sub-committees. The Commission and Committee are composed of appointed representatives from all levels of government as well as emergency response providers. As the state is currently planning a complete upgrade of its existing emergency communications networks, these bodies will fill the crucial role of ensuring user participation with government oversight as the governing bodies, SOPs and agreements continue to be identified and formalized. Although the members will change on a regular basis, these bodies do not have expiration dates or "sunshine" clauses.

Day-to Day PSCC Operations

The PSCC Support Office is housed within the Arizona DPS and is responsible for the support and activities of the PSCC, its committees, and all subcommittees. In this capacity, the office is staffed by an Executive Director and his staff which consists of an executive assistant project manager, communications engineer, marketing specialist, and administrative services officer who are responsible to the Commission to develop and promote a standards-based radio system supporting interoperable communications for public safety agencies. The commission staff assists in writing and submisson an annual report to the Governor, the Speaker of the House of Representatives and the president of the senate.

The PSCC Support Office, is also responsible for executing and maintaining the AIRS State Plan, Channel Plans, and MOUs. Completing the MOU allows agencies to participate in the AIRS for mutual aid operations by accessing state-licensed mutual aid frequencies.

The MOU is a simple two-page agreement (plus a signatory page) containing the purpose, authority, applicability, and understanding of the agreement. It requires an authorized signature of the User Agency and the PSCC Executive Director. Additionally, it requires the

user agency to disclose the number of subscriber units and the channels on which those units will function. (The online form and MOU is available at the following Website: http://www.azdps.gov/pscc/survey.asp).

41-1830.41. Arizona public safety communications advisory commission; membership; appointment; terms; meetings

A. An Arizona public safety communications advisory commission is established in the department of public safety consisting of the director of the department or the director's designee and fourteen other advisory members appointed by the governor pursuant to section 38-211.

B. The governor shall make the appointments so that the existing five emergency response regions in this state are as equally represented on the advisory commission as possible.

C. Members shall serve three year terms.

D. The Arizona public safety communications advisory commission shall meet quarterly or on call of the director who shall serve as chairman.

E. Commission members are eligible for reimbursement of expenses pursuant to title 38, chapter 4, article 2.

41-1830.42. Advisory commission; department; powers and duties; report

A. The Arizona public safety communications advisory commission shall make recommendations to the department regarding the development and maintenance of work plans to outline areas of work to be performed and appropriate schedules for at least the following:

1. The development of a standard based system that provides interoperability of public safety agencies' communications statewide.
2. The promotion of the development and use of standard based systems.
3. The identification of priorities and essential tasks determined by the advisory commission.
4. The development of a timeline for project activities.
5. Completion of a survey of existing and planned efforts statewide and benchmark against similar efforts nationally.
6. Providing support for the state interoperability executive committee.
7. Establishing committees and work groups as necessary.

B. The department may:

1. Employ personnel as required with available monies.
2. Enter into contracts to assess, design, construct and use public safety communications systems.
3. Accept grants, fees and other monies for use by the department and the advisory commission.
4. Enter into agreements to carry out the purposes of this article.
5. Request cooperation from any state agency for the purposes of this article.

C. The department of public safety shall consult with the director of the government information technology agency or the director's designee on an ongoing basis and submit a report quarterly to the director and the joint legislative budget committee for review regarding expenditures and progress of the department of public safety, including a review of staff operations and preparation of requests for proposals for system detail and concept work.

D. The commission shall annually submit a report of its activities and recommendations to the governor, the speaker of the house of representatives and the president of the senate on or before December 1 and shall provide a copy of the report to the secretary of state and the director of the Arizona state library, archives and public records.

FIGURE 19- PSCC ENABLING LEGISLATION[17]

[17] Arizona Legislature

4.1.2 Statewide Interoperability Executive Committee

The Arizona SIEC is an advisory committee to the PSCC. The Arizona SIEC is also authorized by the state through the recommendation of the FCC. The SIEC has a voting body, a Technical Subcommittee and an Operational Subcommittee whose members are listed below. Although the SIEC is a state-level oversight body, it is also responsible for coordinating and implementing the 700 MHz frequency band. The SIEC has a Website available for public review at: http://www.azdps.gov/pscc/standards.asp. Included on this Website are the programming and equipment standards for VHF and UHF equipment as well as other interoperable communications related documentation.

SIEC Members

- Co-Chair Paul Wilson, Captain Pima County Sheriff's Department
- Co-Chair Mark Ventui, Director, Guardian Medical Transport
- Ken Leighton-Boster, Emergency Response Chief, Arizona Department of Health Services
- Scott Tillman, Supervising Telecommunications Engineer, Wireless Systems Bureau, Arizona DPS
- Pete Weaver, Emergency Manager/LEPC Coordinator, Pinal County Public Works

- Technical Working Chairs
  - Co-Chair Kevin Rogers, Manager, Wireless Systems Bureau, Arizona DPS
  - Co-Chair Mike Worrell, Captain, Phoenix Fire Department

- Operations Working Group Chairs
  - Co-Chair Mike Brashier, Captain/Public Information Officer, Casa Grande Fire Department
  - CO-Chair, Carl Hartmetz, Communications Director, La Paz County Sheriff's Department

The SIEC is a highly interactive working group that encourages participation from every aspect of the public safety and first responder community of interest, including state, local, and authorized non-governmental representatives. Through their participation and input, this Arizona SCIP will incorporate the needs and concerns of all levels of public safety providers. This will ensure system design success and additionally, as the standard operational guidelines and procedures are created, they will be acceptable and functional to all disciplines of users.

SIEC Meetings

2005 - July 26, October 26

2006 – January 24, April 25, July 11

2007 – January 23, July 9-10, August 21, September 25, October 23, November 13, December 11

As illustrated by the membership of the PSCC and SIEC, the state has included local participation in the foundation of SCIP's governance. Local entities will continue to be voting members on the governing bodies and participate in the strategy and planning sessions as the new networks are designed and constructed.

Local Government Participation

If it were not for the committed members of the PSCC and SIEC this effort will not be successful. In addition to those who serve in the committee structure, both the PSCC and SIEC hold regular, open, public meetings where all interested parties are invited to attend and participate. For planning purposes, and keeping the plan up to date, the PSCC and SIEC solicit the assistance of those who have an interest in working on this process.

PSIC-Funded Equipment Promotes Interoperability

As outlined in Section 7, the Arizona DHS has required as part of its instructions to local governments that any communications systems purchased with PSIC funds be interoperable with the statewide radio system. To aid in this requirement an *ad hoc* committee will be formed to ensure that all grant applications being considered for funding will comply with the interoperability requirements of the state.

4.2 TECHNOLOGY

The current technology in place within the state is mostly conventional (VHF or UHF), serving the more rural areas. The metropolitan areas have migrated or are in the process of migrating to 800 MHz trunked systems.

For detailed information about existing systems, please refer to the January 22, 2007 *Current Radio Systems Report.* This report is available through the PSCC Support Office (Mail Drop 3450, PO Box 6638, Phoenix, AZ 85005). The following are summary sections from that report.

> The Arizona PSCC is charged with bringing the radio systems of the state into a modern, easy to use network that provides interoperability among all agencies.
>
> As a starting point, a review of the existing, large regional and statewide radio systems

within the state was conducted. This *Current Radio Systems Report* is the first deliverable report of the project. It will serve as a reference document for future tasks in the project. [Please see Section 2 of this plan to view tables that show the following information.]

The report contains three sections. The first section describes the radio systems in operation for and by the state government. This section provides a brief summary of each system, the frequencies used, the general configuration of the infrastructure, an estimate of the number of subscriber units (mobile and portable radios), and how these units are distributed throughout the state. The agencies and systems reviewed are the following:

- ADOT
- Arizona DPS
- Arizona Fish and Game Department
- Arizona Department of Corrections
- Arizona Department of Juvenile Corrections
- Arizona State Parks Board and State Land Department
- Arizona Department of Agriculture
- Emergency Medical Communications System
- Veterans Memorial Coliseum
- Shared Arizona Government Operations
- AIRS

These state systems operate mostly in the VHF radio band, with some at UHF and 800 MHz. There are over 17,000 subscriber units within the state agencies.

The next section of the report describes eight major systems in service in the state that are used by several municipal agencies and private sector firms. These descriptions resulted from a series of meetings where representatives from these organizations met with Federal Engineering and the PSCC staff to discuss the systems. The systems included in this section are as follows:

- City of Glendale
- Phoenix-Mesa Regional System

- Pima County Integrated Wireless Network
- CAP
- Salt River Project
- Arizona Public Service
- Northern Arizona University and the City of Flagstaff
- Maricopa County

Yuma also operates an 800 MHz system.

It was found that all of these major systems operate in the 800-900 MHz band and use various forms of trunking technology. Most of these systems are not directly compatible with the others. These agencies have a total of 35,000 radio units.

The last major section of the report provides a tabular listing of all radio system agencies in the state, indicating which frequency bands are in use. This section reports on County Sheriffs, Cities, Fire Districts, and Tribal agencies and was tabulated in previous reports.

It is estimated that of all the subscriber units in the state, half are 800-900 MHz units, with the remainder divided evenly between the UHF/VHF conventional radios used by state agencies and the UHF/VHF conventional radios operated by local municipalities. Please see Figure 20 below. This review is an important step in creating a new system design.

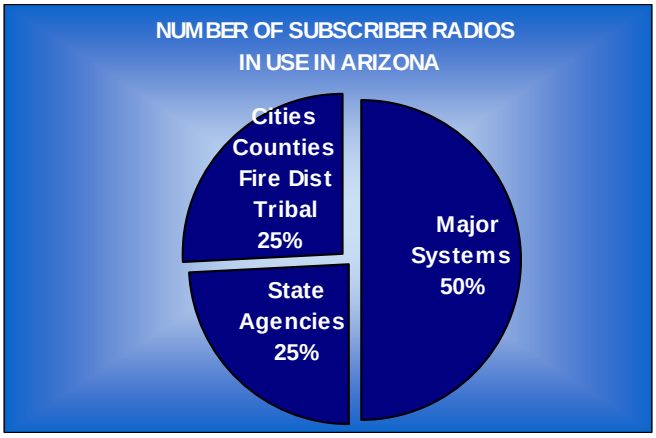

FIGURE 20 - SUBSCRIBER UNITS IN ARIZONA

PSCC's second report, the February 19, 2007 *Radio System Needs Assessment Report,* reviews problems, needs, and requirements found in previous studies and reports. The following excerpt from that report grouped the needs into four categories:

Functional – The system or its components must operate or perform generally as described:

- interoperability
- voice encryption
- dispatch centers
- maintenance
- operations
- subscriber unit tiers
- features
- compatibility

Technical – These engineering goals must be fulfilled by the system, such as:

- coverage
- capacity
- reliability
- quality of service
- mobile data
- interference levels

Governance – The system is managed through some form of governance, which includes policies and procedures.

- dispatch center autonomy and capabilities
- system operating authority
- funding
- ongoing system management

Standards – The industry recognizes these as a general goal to be met. Examples are APCO Project 16 and Project 25.

- The reports identified the Project 25 digital radio standard as a requirement to be compatible with future federal and local systems that are meeting Project 25 specifications.
- Other industry standards were also identified with which the future system should be compatible.

Needs - The needs and requirements can be summarized by the following list:

- Statewide coverage based on risk assessment
- Minimal interference potential
- Cost
- Sustainable investment strategy
- Channel Availability
- Complexity of use

- Encryption
- Interoperability within state agencies
- Interoperability with Metro agencies
- Interoperability with other agencies

State agencies—There are 12 state-operated radio systems. Table 26 summarizes the frequency bands used by the state government agencies, and Table 27 shows the total quantity of portable and mobile radios used on the state-operated radio systems.

Migration path from existing technology to newly procured technologies is described in depth in Section 6 of this document. The migration path includes eventual migration to the 700 MHz standards-based radio system component of the state's interoperability solution, which in turn includes completing a governance model by 2008, a demonstration project scheduled for 2008, and the ability for local government to migrate in place using regional connections. These connections could be either by standards-based technologies complementary to the state system or by regional connectivity. To enable this technology, an enhanced digital microwave network will be completed and additional infrastructure components will be built. State-of-the-art communications centers will be constructed to support the new dispatching functionalities enabled through trunking features and respective fleet mapping shall be performed for subscriber unit programming. Naturally, the individual radio devices need programming and installation in both mobile and fixed locations.

While equipment is being purchased and installed a comprehensive training program will be required. This training program will function on a train-the-trainer conceptual plan. It is estimated that this total statewide migration will be completed by 2013. While this migration plan is being implemented, the existing systems will continue to be operated and maintained until the new technology is accepted. Existing network migration is necessary due to the older equipment life expectancy having been exceeded in many cases, and the pending requirement to comply with the FCC mandate for narrowbanding.

Use of existing equipment with newer technology

The technology the state is replacing has already outlived its anticipated useful life cycle. Manufacturers are no longer supporting the technology and spare/repair parts are available on a limited basis at best. However, for those entities who will chose not to join the statewide radio system, it is important they have the ability to interoperate with the state. It is for this reason the technology being deployed will be "platform neutral." It remains important to note that, regardless if a local or tribal government joins the statewide radio system or not, most of them will be affected by the FCC mandate to narrowband by 2013. This requirement will force non-joining entities to upgrade their radio systems within the next few years independently.

The process to ensure that purchases comply with the statewide plan is described in Section 7 (Funding) of this document.

STATE AGENCY FREQUENCY BANDS					
AGENCY	VHF	UHF	800	800	800
	CONV	CONV	CONV	TRUNK	P-25
Department of Transportation	X			X	
Department of Public Safety		X			
Game & Fish Department	X				
Department of Corrections	X				
Dept. of Juvenile Corrections	X				
Parks Board & State Land Dept.	X				
Department of Agriculture	X				
EMSCOM		X			
Wireless Systems Bureau		X			
Veterans Memorial Coliseum		X			
Shared Government Operations		X			
AZ Interagency Radio System	X	X	X		

TABLE 26 - STATE AGENCY FREQUENCY BAND USE

STATE AGENCY EQUIPMENT INVENTORY						
	HOMELAND SECURITY REGIONS					Total
Equipment type	North	South	East	West	Central	Quantity
DPS mobile and portable radios UHF	350	550	340	310	1350	2900
ADOT Mobile and portable radios – VHF	600	600	600	600	800	3200
800 MHz					800	800
DOC mobile and portable radios	580	2457	2648	0	2317	8002
Equipment type	North	South	East	West	Central	Quantity

STATE AGENCY EQUIPMENT INVENTORY						
	HOMELAND SECURITY REGIONS					Total
Game and Fish mobile and portable radios	515	146	12	63	294	666
Parks mobile and portable radios	12	18	12	16	2	60
State Lands mobile and portable radios	44	69	11	13	285	422
Agriculture mobile and portable radios	8	4	3	2	11	18
EMSCOM mobile and portable radios	210	340	300	250	100	1200
Operational base and repeater stations	29	21	17	25	10	102
TOTAL MOBILE AND PORTABLE RADIOS	1955	4184	3926	1254	5959	17278
NOTE: Quantities across and down may not add to equal totals as some units operate in multiple regions						

Table 27 - State agency equipment inventory

Major Radio Systems - There are 11 major radio systems serving non-state entities.

These major radio systems have 36,369 total subscriber units, including 400 VHF, 400 UHF, 1,500 in 900 MHz, and 34,069 in 800 MHz, distributed as shown below in Table 28.
(We will revise this table when we get the additional information. Added radio systems are all multi-disciplinary, multi-jurisdictional.)

SUMMARY OF MAJOR RADIO SYSTEMS					
Major System Name	**System Type & Features**	**Frequency Band**	**Channel Quantity**	**Radio Site Quantity**	**Subscriber Unit Quantity**
Glendale	P25, simulcast, trunked	800	10	2	2000
Phoenix	P25, simulcast, trunked	800	112		11,000
Mesa	P25, simulcast, trunked	800	16	9	3500
Pima County [18]	P25, simulcast, trunked (future)	800	130	26	6988
Central AZ Project	TDMA, trunked	800	8	15	475
Salt River Project	Trunked	900	25	5	1500
Salt River Project	Conventional	VHF			400
Salt River Project	Conventional	UHF			400
AZ Public Service	Trunked	800	39	32	3349
NAU/Flagstaff	Trunked	800	8	2	757
Maricopa County	Trunked	800		15	6000
Yuma Regional Communications System	Trunked	800	**XXX** We will update this information	**XXX**	**XXX**
Prescott Regional Communications Center	Conventional	VHF	**XXX**	**XXX**	**XXX**
Sedona Fire Regional Communications Center	Conventional	VHF	**XXX**	**XXX**	**XXX**

All systems above are compatible with AIRS (as they all are equipped with cross-band repeaters programmed with the interoperability channels for UHF, VHF, and 800

TABLE 28 - SUMMARY OF MAJOR RADIO SYSTEMS

[18] The Pima County System referred to in table 28 is a planned system.

All Other Radio Systems—The radio systems serving entities other than reported above are summarized in the tables in Section 2.1.0.3 of this plan.

Summary of All Radio Systems—The frequency band and quantity of radios used in all of the radio systems serving entities in Arizona are shown in Table 29.

SUMMARY OF RADIO BANDS USED BY AGENCIES IN ARIZONA					
ENTITY	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
STATE AGENCIES	7	6	1	1	0
COUNTY SHERIFFS	12	1	0	2	0
CITIES	54	10	2	8	4
FIRE DISTRICTS	65	16	0	0	0
TRIBAL NATIONS	10	9	3	0	0
TOTALS	148	42	6	11	4

TABLE 29 - SUMMARY OF RADIO BANDS USED IN ARIZONA

The results of the current systems study show there are a total of 141 VHF systems, 36 UHF systems, and 19 800 MHz systems currently in use. The radio equipment used in the state is aging, and faces increasing difficulties with reliability. As this equipment gets older, it will also have increased maintenance costs, as well as not being able to address the upcoming federal narrowbanding mandates for 2013.

The 19 systems in the 800 MHz band serve approximately 35,000 units. A count of the conventional units was not performed during the study, but the state system units alone total about 16,500. There are another 17,000 conventional units on the VHF and UHF bands used by Sheriffs, Police, Fire, and other public safety agencies.

It is important to note that all of the non-800 MHz radios including portables, mobiles, and base stations must be narrowbanded by 2013, which means many existing radios must be replaced with narrowband-capable units. Radios purchased recently may have narrowband capabilities, meeting FCC rules. Agencies wishing to continue to use their existing systems that have been narrowbanded to meet the 2013 date may choose not to join the 700 MHz system. The AIRS network will continue to serve these agencies. Further, their systems could be interfaced to the 700 MHz system for improved interoperability communications.

Those agencies not joining the 700 MHz system can join at any time in the future. Regardless, AIRS will be maintained as long as existing system users and/or entities coming from other areas exist to permit interoperability among all public safety agencies. Existing systems may also be connected to the statewide system through high-level network interfaces.

There will always be a need to look ahead to acquire new technology. This is true for both the existing narrowband system and the 700 MHz system users. The governance board and PSCC must establish and continuously review migration routes to allow users to upgrade to new technology. For example, although the 700 MHz system is currently planned to use 12.5 kHz digital bandwidth in 2013, it is known that 6.25 kHz bandwidth will be required in 2017, and engineering details are currently being explored to permit this technological change.

Even if new technology is not warranted for the foreseeable future, replacement strategy and funding must be planned by the governing board to replace portables, mobiles, base stations, controllers, and all system components as they reach the end of their useful life.

Even today, agencies are encouraged to purchase radio equipment meeting the standards established by the SIEC regarding interoperability.

While conducting this survey it was noted that the state desired to use the Communication Assets Survey and Mapping (CASM) System to better inventory its equipment. Additionally, the two UASIs in Arizona use CASM to determine their level of interoperablity and their inventories. As the state looks towards deploying their interoperable solution it will be important to create an interoperability and inventory tool. It is likely, tha that the state will ask other jurisdicitons to support this effort by using CASM as well.

4.3 SOPs

Arizona Revised Statute Chapter 26 gives each jurisdiction the ability to create their own EOC. As these centers matured, the need for SOPs, and multiple MOUs developed at the local, regional and state level. Today, each county has an EOC with agreements with all levels of government and non-governmental organizations. This section outlines SOPs and MOUs.

Recognizing that SOPs are the written instructions that organizations and individuals must follow to ensure standardization of activities and or procedures, such as accessing interoperability channels, the PSCC has created a Governance Committee to ensure all aspects of governance are successful and representative of all user levels and disciplines. This committee is responsible for creating SOPs, MOUs and other agreements related to overseeing interoperable communications systems. The SOPs and this plan have been created to capture the thoughts, plans, and procedures related to public safety communications in the state of Arizona. As the interoperability functions and features of the present AIRS and future 700 MHz network will be accessible to state responders, federal responders and emergency service providers from all levels of Arizona, other states, and the federal government, it is imperative that the procedures and terminology follow the nationally-recognized NIMS program. In addition to complying with NIMS, the very concepts of promoting interoperability on a statewide level, ensuring recognized incident management practices and working toward

improved domestic preparedness are the goals of the National Response Plan (NRP). Arizona is enhancing its incident planning and response by enabling communications among the local, state and federal government's emergency responders as well as non-governmental organizations, all towards the national goal of improving protection for our citizens and emergency responders.

For the purposes of illustration, the following is a model of how SOPs and MOUs are created in Arizona, and how the AIRS SOP might be modified if required:

- PSCC to ask the SIEC to develop an MOU for the operations of AIRS
- SIEC would refer this to a committee that would draft a MOU
- The MOU would be vetted at a SIEC meeting – the MOU would be published ahead of time to allow review and familiarization
- The MOU would be discussed at an open meeting
- The MOU would be modified if required, or passed on to the PSCC
- The PSCC would schedule the MOU for their next meeting
- The meeting would be publicly announced, and the MOU published
- The public meeting to discuss MOU is held
- The MOU is modified and/or passed
- The MOU is distributed

Table 30 below is an outline of SOPs used in Arizona. As the state and all of its cities and counties are NIMS-compliant, all SOPs in the state, housed at the state level, or those between two local jurisdictions are also NIMS-compliant. Additional SOPs administered by county governments are listed in Section 4.3.1 (Table 31) of this SCIP.

SOP Name	*Agencies Included*	*Disciplines Included*	*SOP Location*[19]	*NIMS-compliant*	*Frequency of Use*
AIRS	Authorized Public Service Providers	Fire, EMS, Law Enforcement, Government,	http://www.azdps.gov/pscc/standards.asp This SOP gives guidance for use of state interoperability channels.	Yes	Daily

[19] This indicates where the SOP is made available to the state emergency response community of interest. This could be a Website, or manual, etc.

SOP Name	*Agencies Included*	*Disciplines Included*	*SOP Location*[19]	*NIMS-compliant*	*Frequency of Use*
Radio Programming Guide	Authorized Public Safety Providers	Fire, EMS, Law Enforcement, Government,	http://www.azdps.gov/pscc/standards.asp This SOP identifies specific channels and frequencies for accessing the state interoperability network.	Yes	Daily
Arizona Fire Mutual Aid Plan	All Fire Service	Fire Service	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf This document provides the procedures by which mutual aid is requested and coordinated for all fires in Arizona.	Yes	Daily
Arizona Field Operations Guide (AFOG)	All Fire Service	Fire Service	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Field_Ops_Guide.pdf This document provides detailed guidelines and procedures for command staff and firefighters operating in Arizona. A field guide clearly identifies responsibilities, resources, communication details, and other fire-related resources.		Daily
Local Communication Center SOPs	All public service providers	Fire, EMS, Law Enforcement, Government,	Found at Communications Centers Communications Centers have dedicated SOPs guiding communications officers, call-takers and dispatchers, as well as first responders and government entities in procedures and protocols specific to that center	Yes	Daily
Fire Mobilization Guide	All fire agencies	Fire, EMS	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mobolization_Guide.pdf Outlines procedures required for fire mobilizations	Yes	Daily

TABLE 30 - STANDARD OPERATING PROCEDURES

AIRS

Description: The PSCC and DPS recognized a lack of interoperability among the existing public safety radio networks in the state. To address this problem, they deployed AIRS to provide responders with basic interoperability until a permanent solution is developed. While AIRS provides basic interoperability by patching together disparate frequency bands on a single talk group, it is recognized that this is a very limited capability and interoperability that is more comprehensive with greater functionality is a priority for the future.

SOPs: In addition to a technology refresh for AIRS, the Arizona SIEC addressed the basic operational aspects of the AIRS network with operational policies and procedures by publishing an initial set of user-based standards that will ultimately lead to the development and implementation of statewide operational standards. The Arizona SIEC has also established a standardized nomenclature for the AIRS network mutual aid channels and related, non-networked, national and regional mutual aid channels. All of this information is unrestricted and publicly available on the Arizona DPS website:

http://www.azdps.gov/pscc/documents/AIRSPolicy.2.2.07.pdf

The guidelines for AIRS include detailed explanations of AIRS' purpose, the governing entity, and eligible users. Amongst the users of the AIRS SOP are the Navajo Nation, the Federal Bureau of Investigation, the National Park Service, private ambulance services, city, and county governments. Additionally, there are definitions and clear operational guidelines governing channel use and priority levels. The guidelines go into further detail, identifying Communications Center responsibilities as well as Command and Control responsibilities in support of and compliance with NIMS and ICS. Finally, the document defines Field User responsibilities and system failure contingencies.

Programming Guide

Description: *The Subscriber Programming Guide – Arizona Mutual Aid and Interoperability Channels* is a concise one-page document listing the frequencies and channels to be used for interoperability across the state.

SOP: The guide uses common naming structures to ensure clear identification regardless of user agency or discipline. It also identifies bandwidth, transmit and receive frequencies and it coordinates the VHF, UHF and 800 MHz bands for the state interoperability network. It is available publicly through the SIEC website. Users of the programming guide include, state, local, tribal and non-governmental entities.

Arizona Fire Mutual Aid Plan

Description: This document is fully NIMS-compliant and used for multi-hazard response planning. The plan provides coordination and a systematic approach for all fire and rescue service agencies to use during management of incidents beyond the agency's original capabilities. Additionally, the plan provides equipment inventories and promotes training and exercise between emergency service providers. The plan is an extension of the Arizona State Response and Recovery Plan and was authored considering the needs of local, county, tribal

and state responders. Users of the Arizona Fire Mutual Aid Plan include state, local, tribal and non-governmental entities.

SOP: The document includes twelve sections and takes a comprehensive approach toward coordinating fire service responses. There is clear guidance on which procedures are to be used and when. The document includes sections for review and updating, and integrates several other guides, such as the State of Arizona Fire Chiefs' *Mutual Aid Plan.* The document is available at: http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf

Arizona Field Operations Guide

Description: The *Arizona Field Operations Guide* is a comprehensive field manual for the fire service. The guide includes sixteen chapters with three appendices. *Commanders' Responsibilities*, *Mutual Aid Requests and Deliveries*, *Urban Search and Rescue*, and *Safety and Accountability* are among the many fire-related programs and procedures explained in detail. Additionally, the document covers several related NIMS/ICS sections such as Command, Logistics, Operations, Planning and Finance. Appendix A provides excellent explanations and guidance as to the channels, frequencies, and procedures for operating in Arizona. It defines tower/repeater locations and operational details as well as use of National and State Tactical and Calling channels. In addition, it includes maps identifying the channels to be used based on user location.

Local Communications Center SOPs

Description: Independent Communications Centers have dedicated SOPs and policies giving guidance to employees and center users.

SOPs: These guides will contain procedures for all aspects of the center's operations including but not limited to answering phones, paging for emergency and non-emergency calls, equipment operation including interoperability gateways and electronic patching, and selecting repeater locations for coverage control. In addition to specific equipment procedures, the documents should contain protocols for dispute resolution, archiving and historical recall, and employee-related rules, such as ethical conduct. SOPs of this nature are reviewed regularly with employees and users and are enforced by the Communications Center Supervisors, Directors and Field Coordinators. They are distributed to all employees and user agency commanders and generally are not available to the public at large.

Arizona SIEC VHF Minimum Equipment Standards

Description: The SIEC has adopted nationally recognized feature sets for VHF equipment that

promotes interoperability.

SOP: This document is one page in length and details minimum channel capacity, channel display, frequency range, narrowband capability and P-25 capability. It is available on the SIEC website at:

http://www.azdps.gov/pscc/documents/vhfminimumequipstandards.pdf

Arizona SIEC UHF Minimum Equipment Standards

Description: The SIEC has adopted nationally recognized feature sets for VHF equipment that promote interoperability.

SOP: This document is one page in length and details minimum channel capacity, channel display, frequency range, narrowband capability and P-25 capability. It is available on the SIEC website at:

http://www.azdps.gov/pscc/documents/uhfminimumequipstandards.pdf

Arizona Fire Mobilization Procedures

Description: This document outlines the coordination procedures for mobilizing fire resources across the state.

SOP: This document defines mobilizations requirement and expectations for such actions, including mutual aid requirements. The document is available online at:

http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mobolization_Guide.pdf

4.3.1 Existing Interoperable Communications SOPs

Most SOPs in the state are between local entities (and are inclusive of authorized non-governmental agencies, federal entities, and tribal nations); therefore the state would not have a copy of these documents. With regard to State SOPs, they are inclusive of state agencies, local authorities, federal agencies, non-governmental organizations and tribal nations. Below are a series of statewide SOPs and specific information about each. In all cases, SOPs are NIMS-compliant pursuant to both the Governor's Executive Order and by local governments' ordinances or directives.

A request was made of the county EOC directors, managers, and coordinators to share a listing of NIMS-complinat SOPs that include interoperable communications components with the PSCC for the purposes of this SCIP. Table 31 (below) gives the response received.

County	SOP Name	Agencies Included	Disciplines Included	SOP Location	Frequency of Use
Cochise	CMA	All public agencies in county	Law enforcement, fire, EMS	Cochise County Sheriff's Department	Daily
Coconino	Coconio County EOP	All	Law enforcement, fire, public works, government	Coconino EOC, City of Flagstaff Website	Weekly
	Ponderosa Fire Advisory Council	Highlands Fire Department, U.S.F.S – Coconino, NF, National Park Service – Flagstaff area parks, NAU/ERI, Ponderosa Fire District, Pinewood, Mormon Lake, Sedona, Sherwood Fire, Summit Fire District	Wildland fire CCSO, Emergency Management	All agencies regulated by this SOP	Throughout the wildland fire season
Maricopa	Maricopa County Emergency Operations Plan	All Maricopa County and outside agencies represented in county EOC	Law enforcement, public works, public health, mass care, emergency management, fire	Maricopa County Department of Emergency Management	Upon activation of EOC for incidents and exercises
	Maricopa/Pinal County Emergency Alert System Plan	Sheriffs Departments, and Emergency Management Departments of	Emergency management, law enforcement, broadcase	Maricopa County Department of Emergency Management	Infrequent – except for National Weather Service storm/flood

County	SOP Name	Agencies Included	Disciplines Included	SOP Location	Frequency of Use
		Maricopa and Pinal County, National Weather Service, Local radio and television broadcasters	communications		warnings
	Phoenix Urban Area Security Initiative Strategic Plan	All city, and town police, fire departments, emergency management offices, county public health	Fire, law enforcement, emergency management, public health	Maricopa County Department of Emergency Management City of Phoenix Emergency Management Department	Terrorism/WMD exercises or actual events
Mohave	Mohave County Hazardous Material Plan	Fire district, law enforcement (police and sheriff)	Fire, law enforcement, public safety	Mohave County Emergency Management Office	Annually
	Huamapai Mountain Fire Plan	Fire districts, sheriff's office, state lands, BLM	Fire	Mohave County Fire Officers Assoication	Annually
	EAS Plan	Public safety	Fire, law enforceement	Mohave County Emergency Management Office	Annually
	Diamond Bar Road Plan	Sheriff, Grapevine Mesa Fire Department	Fire, Emergency Medical, law enforcement, tribal	Mohave County Emergency Management Office	-Draft-
Pima	DPS Ranger	Sheriff and DPS	Law	Pima County	Regularly

County	SOP Name	Agencies Included	Disciplines Included	SOP Location	Frequency of Use
	Communication Plan	Ranger	enforcement	Sheriffs Deparmtent	
Pinal	Pinal County Emergency Response and Recovery Plan	Pinal County agencies – all	All disciplines – fire, law enforcement, HazMat, health and human services, public health, public works, etc.	Arizona Department of Emergency Management (ADEM), Pinal County Emergency Management Office, All counties within Arizona (EMAC)	As needed during the year
	Pinal County All-Hazard Mitigation Plan	All agenices within Pinal County	All disciplines	FEMA, ADEM, Pinal County Emergency Management Office	As needed for all-hazard mitigation
	City/Town Emergency Response and Recovery Plans (Emergency Operations Plans)	Cities of Apache Junction, Casa Grande, Coolidge, Eloy, Maricopa. Towns Florence, Kearny, Mammoth, Superios	All disciplines – fire, law enforcement, HazMat, health and human services, public health, public works, etc.	Pinal County and each jurisdiction within Pinal County	As needed throughout the year
Santa Cruz	Series of bi-lateral plans (not written) between county and Sonora, Nogales, Mexico	Santa Cruz County and the state of Sonora, Mexico	EOC, Fire, law enforcement, includes communications	Information agreement	As needed throughout the year
	County Mutual Aid	All county agencies	Law enforcement, fire, public	Santra Cruz County Emergency	10-15 time a year

County	SOP Name	Agencies Included	Disciplines Included	SOP Location	Frequency of Use
			works	Management	
	Nogales Bi-National Plan	Nogales, Arizona and Nogales, Sonora, Mexico	Fire, public works	Santa Cruz County Emegency Management	2-5 times annually
Yavapai	Yavapai County Disaster Response Plan	All county communities inclusive of those that are non-incorporated	Law enforcement, fire, emergency medical services, public health, public works, VOAD agencies, ARES/RACES, animal disaster services, higher government	Yavapai County Emergency Management Department, DEMA	Semi-monthly
	Disaster Response Plans	All (incorporated) cities and towns in the county	Law enforcement, fire, emergency medical services, public health, public works, VOAD agencies, ARES/RACES, animal disaster services, higher government	City and town halls, fire stations, police	Monthly
	Disaster Response Plans-Tribal	Yavapai Prescott Tribe, Yavapai Apache Tribe	Law enforcement, fire, emergency medical services, public health, public works, volunteers	Tribal headquarters	Quarterly
	State Fire Mutal Aid Agreement	All fire agencies and emergency management	Fire, and emergency	Yavapai County Emergency Management	Monthly

County	SOP Name	Agencies Included	Disciplines Included	SOP Location	Frequency of Use
		agencies in the state of Arizona	management	Department	

TABLE 31 - COUNTY EMERGENCY MANAGEMENT STANDARD OPERATING PROCEDURES

4.3.2 SOP Documentation

The SOPs for AIRS are published on the SIEC website (and are available in Appendix A of this document). They are also available through contact with the PSCC Support Office.

Other SOPs governing how counties deploy their assets during times of emergency are sent to the Arizona DEMA. DEMA then audits the County SOPs, which are cataloged and verified for NIMS compliance. Once the SOP is deemed NIMS-Compliant, the county receives a letter advising that the SOP has been received and that the county is in compliance with NIMS and Arizona requirements.

4.4.3 SOP/MOUs Jurisdictions

The State-sponsored SOPs related to using the "Interoperability"-identified channels cover all jurisdictions providing public safety services in Arizona that wish to access those channels.

SOPs governing local government/state government EOC use and procedures are updated and sent to the State as required. Each county is required to submit an Emergency Operations Plan to the Arizona Division of Emergency Management (ADEM). These plans include how counties will interact with cities within their jurisdictions via a series of SOPs, MOUs, after-action reports, and processes to ensure emergencies are handled affectively and expeditiously without need for concerned about agreements, contracts, or understandings. Each plan is exercised and updated regularly. Emergency Operations Plans include all agencies that will or could be used by the county in times of emergency or restoration. This includes city, county, state, federal, and non-governmental organizations. Additionally, there are provisions for elevating emergency operations to ADEM. Each plan is multi-disciplinary and includes fire, law enforcement, public works, emergency medical, communications, transportation, humane/animal welfare officials, non-governmental organizations that assist in emergencies, some of which may include search and rescue, mass care, the Red Cross, or the Salvation Army, etc. Any county submitting an SOP is expected to comply with that policy. Table 32 below outlines County/State SOPs and the agencies they pertain to.

County/State SOPs

SOP Name	Agencies Included	Disciplines Included	SOP Location (Where can it be viewed)	Frequency of Use
Apache County Emergency Operation Plans and Procedures	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Apache County Emergency Operations, or the Board of County Supervisors, ADEM	Used as needed, exercised by county
Cochise County Emergency Operations Procedures Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration		Used as needed, exercised by county
Coconino County Emergency Response and Recovery Plan			Coconino County EOC, or County Board of Supervisors, ADEM	Used as needed, exercised by county
Gila County Emergency Operations Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Gila County EOC, or County Board of Supervisors, ADEM	Used as needed, exercised by county
Graham County Emergency Operation	All agencies in county, includes	Includes all disciplines that	Graham County EOC, or County	Used as needed, exercised by

County/State SOPs				
SOP Name	**Agencies Included**	**Disciplines Included**	**SOP Location (Where can it be viewed)**	**Frequency of Use**
Plan	NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	could be used by county to respond to an all hazard emergency and restoration	Board of Supervisors, ADEM	county
Greenlee County Emergency Response Plan	All agencies in county that are responsible for the restoration of vital services. This may include NGOs, and state agencies	All hazard plan and is inclusive all all disciplines	Greenlee County, or County Board of Supervisors, ADEM	Used as needed, exercised by county
LaPaz County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	LaPaz EOC, or La Paz Sheriff's Department, ADEM	Used as needed, exercised by county
Maricopa County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Maricopa County EOC, or County Board of Supervisors, ADEM	Exercised by county, used as needed, and part of UASI planning

County/State SOPs				
SOP Name	**Agencies Included**	**Disciplines Included**	**SOP Location (Where can it be viewed)**	**Frequency of Use**
Mohave County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Mohave County EOC, or County Board of Supervisors, ADEM	Used as needed, exercised by county
Navajo County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Navajp County EOC, ADEM	Used as needed, exercised by county
Emergency Operations Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Pima County EOC, or County Department of Health, ADEM	Used as needed, exercised by county
Pinal County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may	Includes all disciplines that could be used by county to respond to an all hazard emergency and	Pinal County EOC, or County Board of Supervisors, ADEM	Used as needed, exercised by county

County/State SOPs				
SOP Name	**Agencies Included**	**Disciplines Included**	**SOP Location (Where can it be viewed)**	**Frequency of Use**
	be used for emergency services or restoration	restoration		
Santa Cruz County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Emergency Management Department, Santa Cruz County, ADEM	Used as needed, exercised by county
Yavapai County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Yavapai County Department of Emergency Management, City of Flagstaff, ADEM	Used as needed, exercised by county
Yuma County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Emergency Operations Cener, Yuma County, ADEM	Used as needed, exercised by county

TABLE 32 - SOP AND AGENCIES

In all cases each of the Emergency Response and Recovery Plans outlined above located in each of Arizona's EOCs, because each county has a series of Mutual Aid Agreements (MAAs) with all other counties and with the state to assist should the need arise.

In addition to being NIMS-compliant, each SOP and MOU complies with a series of additional federal and state laws, many of them dating back more than half a century. Below is a listing of applicable laws, and regulations governing SOPs, and MOUs.

Federal

1. Federal Civil Defense Act of 1950, as amended, and Public Laws 81-920, 93-288, and 44CFR205 creating the Stafford Act.
2. Defense Civil Preparedness Agency, Circular Number 75-4, *NCP Planning*, Auguts 4, 1075
3. DCPA Publication, TR 82, "High Risk Areas", April 1975
4. FEMA D R & R Series 1-20
5. National Flood Insurance Act of 1968, as amended
6. FEMA - 116/February 1987. Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials
7. FEMA - 122/March 1987. Integrated Emergency Management System - Mitigation Program Development Guidance

State

1. Chapter 2, Title 26, Arizona Revised Statutes as amended
2. Arizona Nuclear Civil Protection — *Nuclear Attack Plan* (ANCP-NAP), November 1976
3. *State of Arizona Emergency Plan* (Resource Management), January 1966
4. Arizona Nuclear Civil Protection — *War Crisis Evacuation* (ANCP-WCE)
5. State of Arizona, *Emergency Response Plan* (Peacetime Disasters) 1982
6. A.R.S. 35-192
7. A.R.S. 26-301 - 26-322
8. *State of Arizona Hazard Mitigation Program Reports* (August 1980 - 614 DR and July 1, 1985 - 730 DR)

4.3.4 WHO DEVELOPED EXISTING SOPS AND HOW OLD ARE THEY

The AIRS SOPs was established in May 2006 by the SIEC with the assistance of the Arizona DHS.

Since that time, there have been several revisions to the programming guide, however the MOU and other salient information has remained constant.

The MOUs and SOPs outlined above for county agencies incorporated in their Emergency Operations and Recovery Plans are all less than one year old as of September 2007. The State of Arizona through ADEM recently contracted with a consulting company to determine if the state and counties are NIMS-compliant with the intent to take any required corrective actions in 2007. The audit indicated that each of the counties were NIMS-compliant. The auditor did make one global recommendation, which the state accepted and will complete by October, 2007 to include tribal nations in the wording of NIMS documents.

Each of the Emergency Operations and Recovery Plans reviewed for this SCIP indicated that most where written sometime around 2002, with several being earlier and others later than that date. Each plan however, had annexes that were typically updated in 2007.

4.3.5 SOP INFORMATION RELAYED WITH SUPPORTIVE TRAINING

Information about AIRS is available the PSCC Website. Additionally, DEMA trainers share this information when they visit each of the local government's EOCs.

Although reports indicate that AIRS is intutitutive to use and that training is probably unecessary, there are plans to create a training module for this program. The DPS and the PSCC both believe AIRS usage would increase substantially if there were proper training available. Therefore, as AIRS comes closer to its completion, training for this system will begin.

Through initial training and continuing education programs, first responders are trained to use their respective communications equipment. During these sessions they are taught how to change channels and frequencies, including how to access channels assigned to interoperability functionality such as the AIRS channels. The process and system requirements and use are sufficiently intuitive that all entities are able to use it when necessary without AIRS specific training, which is evidenced by how often and how well the system works as a primary interoperability channel.

4.3.6 SOPS AUTHORITY

Although SOPs are not legally binding in Arizona, MOUs are. As SOPs are most often a component of an MOU, failure to abide by the entire MOU (including the SOPs requirement) could nullify the MOU and other legal agreements they share. All parties, however, enter into MOUs and plan and try to abide by SOPs in good faith.

4.3.7 MUTUAL AID AGREEMENTS, MOUS INCLUDE INTEROPERABILITY IN THE STATE

The state of Arizona has MOUs with local and tribal entities addressing AIRS usage. (A copy of the AIRS MOU document can be found at the following location: http://www.azdps.gov/pscc/survey.asp.)

The State of Arizona and each county have a series of MOUs that include an agreement on how to communicate during an emergency. In addition to each of the SOPs and assoicated MOUs in tables 30, 31, and 32, the state maintains additional MOUs covering communications with its border states and Mexico. In addition to covering communications, each MOU includes a full range of services that each entity can share when needed, as well as a method of payment for these services.

4.3.8 SOPs DEVELOPED TO COVER ALL DISCIPLINES, JURISDICTIONS AND LEVELS OF GOVERNMENT

SOPs authored by the PSCC and SIEC were developed to guide all interoperability channel users regardless of jurisdiction or discipline. The guidelines were drafted generically to allow individual user judgment as to the proper actions in any given situation, but specifically enough to address each discipline's interoperability role to ensure successful interoperable connectivity. (A series of these SOPs are found in tables 30, 31, and 32.)

As the statewide radio system is deployed, no matter how a jurisdiction may elect to participate a series of MOUs and SOPs will be developed. SOPs will be required to ensure that NIMS is complied with and to maintain a code of conduct and expections of use while operating on this system. MOUs are the contractual instruments that will determine the specific requirements both of the state and the entity that will be partnering with the state on this system.

4.3.9 SOPs TRACKED AND ENFORCED TO ENSURE COMPLIANCE

Once an SOP is sent to ADEM, the procedure is checked to determine if it is NIMS-compliant. As an example of a periodic review, in 2007 ADEM funded a study to determine if all SOPs on file were NIMS-compliant. The results of the audit indicated that the state and county government were fully compliant.

4.3.10 PROCESS TO INSURE SOPs ARE REVIEWED AND UPDATED

Most SOPs in states are created by local governments for their specific needs. A sampling of these SOPs is located in this report in tables 30, 31, and 32. As noted by the users of these SOPs they are used on a fairly regular basis. It is because they are used so often that whenever there is a shortfall for a service or procedure, a corrective action must be taken quickly. This dynamic method of handling SOPs ensures that each is reviewed and updated regularly by local government.

As states use SOPs, they generally do so when assisting local govenments. In a similar fashion, when a state agency finds that there is a need for remedial action to mitigate an SOP's shortcoming, it is taken immediately.

The state has few SOPs it controls entirely. One SOP the state does control is for AIRS usage. The SIEC, an advisory committee of the PSCC, reviews the AIRS SOP on a regular basis to ensure it is current and applicable. When a procedural question arises either from the field or through the routine review process, the question is discussed in an open Committee meeting, researched as necessary and the section in question is modified, or left standing as written.

Additionally, an SOP governs communications between Arizona and Sonora, Mexico. This SOP is reviewed by both jurisdictions on a regular basis and modified as required. This SOP covers the kind of equipment in use, operation of that equipment, and procedures to contact and work with each government.

SOPs between the state and local governments are checked on a periodic schedule, or as events warrant. All SOPs are currently being verified for NIMS compliance, with anticipated completion during November 2007.

4.3.11 SOPs CURRENT WITH STATE STANDARDS AND INITIATIVES

AIRS is fully compliant with the standards and current initiatives of the state interoperability plan.

The SOP between Arizona and Sonora, Mexico is also fully compliant with the State's communications plans and with NIMS.

As the state, and local governments are compliant with NIMS, SOPs between county government EOCs and DEMA are required to be NIMS-compliant.

4.3.12 SOPs INCORPORATE NIMS

Where appropriate, SOPs use NIMS and ICS terminology. For both State and local entities authoring SOPs, there are NIMS Compliance Officers appointed within the agencies. These individuals are responsible to ensure the new policies and procedures are NIMS compliant. The SOPS must reflect command, operation, and communications as directed by NIMS. The SOPs authored by the PSCC and the SIEC, the governing bodies of Arizona's Interoperability program, and all other state agencies are NIMS-compliant by order of the Governor through executive order EO2005-08, found in Appendix E

As the state of Arizona and all of its cities and counties are NIMS-compliant, it is expected that all SOPs are also NIMS-compliant.

4.3.13 ICS TRAINING GIVEN TO CURRENT COMMUNICATIONS PERSONNEL

The state of Arizona delivers ICS training as part of its statewide training program, while it is local government's responsibility to determine which communications personnel receive required training based on their roles. Communications Centers are typically equipped with an individual responsible for overall training coordination. Classes for new communications officers include all of the NIMS classes required for certification. The ADEM has a Website listing all of the classes taught on a regular basis. Currently, ADEM has over 135 instructors providing NIMS and other training. A short sample of what is available from ADEM can be found in Table 33. Training includes NIMS 100-800 classes as well as any other training that may be needed for state, local and tribal entities. The state, however, does not offer communications training or certification for communications personnel (please see Section 4.3.14 for additional information).

4.3.14 STATE CREDENTIALING OF (COMMUNICATIONS) PERSONNEL

All classes taught by the state are tracked through a computerized tracking system and the respective data is available to the student and those authorized to receive this information under United States and Arizona State privacy laws.

The Arizona Fire Chiefs' Association teaches and provides credentials for COML and Incident Communications Technician (COMT) classes. Additionally, one of the few nationwide "train the trainers" instructor is a PSCC membor. He instructs others on how to teach all of the required communications classes for communications credentialing. In Arizona today, these classes are part of their Fire School. Representatives of the Arizona Department of Lands, Arizona DPS and others attend these classes as well as many other state, local, and tribal representatives.

4.3.15 COML TRAINING CURRIUCLUM

Most COMLs are local positions. The State does not currently provide a training curriulum for these classes, nor do they have oversight over local communications staffing and training. Training is available, as outlined ins Section 4.2.14 above for those who wish to take the classes.

4.3.16 SOPS INCLUDE QUALIFIED PERSONNEL TO STAFF COMMUNICATIONS UNIT

The only existing SOP is for AIRS. This requirement is not necessary for the operations of AIRS.

When ADEM is asked for communications assistance by a local entity, a fully equipped communications van is dispatched to the area of incident. These vans were purchased by ADEM and given to local governments with the understanding the local government will pay for the maintenance of the vehicle and make it available to others when needed. The corresponding SOP identifies that the van will include an accompanying qualified

communications specialist who will assist the requesting agency with vehicle and communications technology operations. Local governments then reimburse the county providing aid as authorized by the State's MOU. As this is typically a local government function, the state does not maintain a listing of qualified personnel to staff the Communications Unit function. The State relies on the local communications centers to operate their administrative chains of command in an appropriate manner consistent with NIMS and ICS.

4.4 Training and Exercise Plan

Within the state there are two types of training and exercise plans that take place on a regular basis. One type of training takes place at the local jurisdictional and discipline level and covers job basics (how to perform one's duties and responsibilities.) The other form of training and exercise program is conducted by the state. State training is most often reimbursed to local government and often deals with matters of national security. These classes may teach NIMS compliance, WMD, HazMat, etc. The state offers a large number of classes to local responders and those classes are taught cross-discipline and cross-jurisdictionally as a matter of practice.

Arizona will be participating in the upcoming TOPOFF-4 exercises. This will be an opportunity for the state to learn more about issues that are driving the nations defense priorities. As TOPOFF-4 is in the planning phases there is little information currently available about this exercise. During TOPOFF-3, Arizona attended as an observer.

4.4.1 Statewide plan for interoperability communications Training

As the state has a regular and intensive training program administered by DEMA, covered in more detail in the following section. This program is designed to instruct emergency responders in NIMS and other courses as well as communications. However, the state does not maintain a separate training class or curriculum for "interoperable communications training." Rather, in most cases those processes and procedures are taught at the local government level. It is at that level where local governments can instruct their public safety providers the interoperability requirements and options available and unique to their jurisdictions.

4.4.2 Exercise plan for state agencies

The state has an extensive training program conducted by both individual agencies and by ADEM. Exercises offered to state agencies are also offered to local and tribal entities as well. In addition to participating with local governments on exercises with cross-jurisdictional and disciplinary boundaries, DEMA conducts a series of rotating exercises on an annual basis. In one recent rotation, DEMA conducted tabletop exercises one year, followed by a functional exercise the following year, with a full-scale exercise the third year.

With regards to the training program for the new 700-800 MHz statewide solution, refer to section 4.4.6. ther exercise programs are being worked on, including exercises on chemical issues, pandemics, bird flu and cyber-terrorism.

Additionally, each year local governments conduct their own training and exercise programs. These programs are generally multi-disciplinary and inter-jurisdictional within a county government.

4.4.3 Exercise Plan for local, and tribal government

As outlined above, there is little difference between the exercises offered to local and tribal governments and those offered to state agencies. DEMA makes every attempt to recruit participants from all levels of government to participate in their training programs.

Table 33 below is representative of the over 40 courses being taught by DEMA every month to state, local, and tribal entities. DEMA currently has over 135 instructors who teach FEMA G-Level classes to the responder community within Arizona each year. Training for the new 700/800 MHz statewide system, will be conducted prior turning on the system on a regional basis. Training will consist of technical, user, and supervisory level training for this new technology.

Class	Methodology	Occurrence	Agency	Audience
Incident Command System 300	Classroom	Multiple times each month	Open	All
Incident Command System 400	Classroom	Multiple time each month	Open	All
HazMat Classes (Responder awareness)	Classroom	Multiple times each month	Open	All
Citizen Corp Classes	Classroom, train the training	Multiple times each month	Train the trainer	Trainers
MultiHazard School	Classroom	Multiple times	Depends on class	All/Fire
PIO classes	Classroom	Multiple times	Open	All

TABLE 33 - SAMPLE OF TRAINING COURSES EXISTING IN ARIZONA

For the purposes of illustration we sampled one month of training conducted by DEMA. Table 34 represents the coursed taught during this time, and 67 separate classes.

Class Number	Title
MAG400	Advanced Incident Command System
MAIS200	Basic ICS
MAG417	Community Emergency Response Team Train-the-Trainer
MAU200	First Responder Operations
MAG191	ICS/EOC Interface
MAMGT-313	Incident Management/Unified Command
MAG300	Intermediate ICS
MAIS100	Introduction to the ICS
MAIS700	Introduction to NIMS
MAADEM291	Joint Information Center Training
MAIS362	Multi-Hazard Emergency Planning for Schools
MAG290	Public Information Officer
MAG270.4	Recovery from Disaster

TABLE 34 - CLASSES TAUGHT BY DEMA (SEPTEMBER 2007)

4.4.4 POLICY IMPLICATIONS AND CERTIFICATIONS

As a matter of public policy, and to ensure public safety, the state stands ready to assist local

and tribal governments in creating training that is of value to them. Training largely follows the rules and regulations created by DHS, as most often local governments require DHS assistance to help fund the training. DEMA, however, is able to provide training on a cost recovery basis to any entity.

As the statewide radio system emerges as the interoperable radio solution of choice, the PSCC would prefer to require all responders in the state of Arizona to include as part of their annual in-service training refresher courses on the proper use of interoperable radio devices. These annual in-service training components should be established and approved by DEMA in consultation with the PSCC. Additionally, personnel should be tested on their understanding of the SOPs as well as meeting the defined requirements when performing their job to ensure the safety of the state's citizens and the responders themselves.

In addition to regular user education, exercises should be conducted across jurisdictions and disciplines to ensure the practices used are up-to-date and well understood. This can be done by conducting full-scale or tabletop exercises, but realistic exercises are most useful to determine plan viability. These exercises should be conducted regularly as response times, operational limitations, personnel and equipment change. Tabletop exercises are useful to discuss, plan, coordinate and/or document emergency response plans and procedures, normally at the command level. Full-scale exercises give experience and generate feedback from all levels of responders.

4.4.5 Process by which the state will develop manage, maintain, and upgrade or coordinate as appropriate

Classes are taught year-round in Arizona. Registration is Web-based and available at www.dem.state.az.us/

The curriculum for these classes comes from several areas. Class material may come from FEMA or other areas of DHS. It also may come from those who require the training. DEMA has the ability to create classes on almost any subject to fit responder needs. Specific requirements for local government training are determined by the local authority.

4.4.6 The process for offering training and exercises

The state offers training to all levels of government which includes exercises at a multi-disciplinary level. NIMS certifications are offered via the classes taken at DEMA and are reported elsewhere in the SCIP.

With respect to the long-term solution of a new 700-800 MHz trunked radio network, training will be required in many areas of operation. Operational training on proper use of the devices

will be necessary for individual users, maintenance training will be required for maintenance of the network as well as operation of the network features. It is anticipated a train-the-trainer program will be developed as network development progresses. This training will be required as a deliverable from the manufacturer. DEMA offers a complete curriculum to state, local and tribal entities. The class schedule may be reviewed at their Website www.dem.state.az.us. In addition to listing classes available, DEMA actively recruits people to attend its classes, which is accomplished by an extensive outreach program. The outreach efforts include the Director of the training facility making contact with local government EOCs to ensure they are aware of classes being taught as well as any requirements or certifications that may be coming up in the foreseeable future. This outreach to local government includes advising them of exercises being conducted in the state and how they may participate in these exercises.

In addition to the Director of Training, DEMA has several training coordinators who also visit with EOCs and emergency managers to keep them informed of classes and upcoming exercises.

Additionally, DEMA makes itself available to local and tribal governments to teach courses that are tailored to the needs of the individual jurisdiction.

4.4.7 Process ensures that training is cross disciplinary

All training conducted by DEMA is, to the greatest extent possible, cross-disciplinary. Classes are usually taught by instructors representing two different disciplines. This is done to ensure that those attending the classes understand how important it is to include personnel from other disciplines in training, and how important it is to represent a true first responder community.

To further help training become cross-disciplinary, whenever possible, classes are open and encouraged for all who wish to attend. There are exceptions to this, depending on the nature of the classes or prerequisites. For example, there may be some HazMat classes for which law enforcement may not meet the minimum requirements and thus would not be allowed to take, or other classes for law enforcement that fire fighters cannot attend.

4.5 Usage

A person's ability to use equipment proficiently increases as they become more familiar with it through repeated use. It is the PSCC's long-term goal to migrate to a statewide, interoperable radio system that will be used by all state, local, tribal, and federal government entities on a daily basis. Until that time however, the state will continue to promote using AIRS for interoperable communications. The PSCC also supports those jurisdictions that have already migrated to standards-based radio systems that will be compatible with the state radio system

when it is enabled.

In an attempt to determine how often interoperable communications were used in Arizona, the best data comes from local governments. We asked EOC directors, managers and corrdinators for assistance in determining interoperability use. We asked each of the EOCs the following questions:

- Does your county have interoperable communications?
  - If so, what are they?
  - How often are they used?
  - Are interoperable communictions used for (planned) regional events?
  - If so, please describe that use

Table 35 indicates the results of this survey.

County	Interoperable Equipment	Frequency of Use	Planned Events	How Often Used
Cochise	-Count Mutual Aid (CMA) channel	Frequently – anytime multiple agencies are dispatched to an event	-Cochise County Fair, -DUI Task Force, -La Vueita de Bisbee (Bike Race)	Various times, some held annually
Coconino	-Sheriff and FFD coordinate joint dispatch for law enforcement for greater Flagstaff -Uses AIRS -PFAC has common frequency as part of their mutual aid response	AIRS rarely	Written after the last law enforcement event – never used	
La Paz	-Interoperable communications via dispatch (consolidated PSAP/911) -Radios capabile	Used daily for both routine and emergency events -As needed	Used as routine	Daily

County	Interoperable Equipment	Frequency of Use	Planned Events	How Often Used
	of communicating with DPS/EMSCOM			
Maricopa	-800 MHz with talk groups -ACU-1000 -EOC, 800 MHz capable to communicate with ADEM -EOC VHF radio to communicate with others in that spectrum	Used on a daily basis -For exercises -For exercises -For exercises	800 MHz system used routinely-other equipment used as needed for emergencies or for exercises	Daily Other equipment used as needed and for exercises
Mohave	-AIRS -State Communications Vehicle	-1-5 times/yr -Every three months	-No -Laughlin River Run	As needed Every 4 months
Pima	-Gateway (tri-band repeater) -ACU-1000 -AIRS (will become operational in 60 days)	-Used most often -Used Infrequently -AIRS, TBD	-Large bike race	4-times a year
Pinal	-Console patch -Mobile command vehicle (ACU-1000)	-Several times weekly -Infrequently	-Annual biker run -Annual Country Thunder Music Event - Regional exercise -Statewide exercise	Several times per yera
Santa Cruz	Radio- ACU-1000, AIRS, Common VHF	-Regularly -Regularly -Regularly	-Wildland fires -International incidents	All equipment is used on a daily basis

County	Interoperable Equipment	Frequency of Use	Planned Events	How Often Used
	frequencies, Data – WAIS software	-Regularly		
Yavapai	Two regional dispatch centers	Daily	Any significant event	Event dependent

TABLE 35 - ARIZONA COUNTIES EOC INTEROPERABILITY USE

4.5.1 DAILY INTEROPERABILITY

In those areas of the state with shared radio systems, daily interoperability exists today. In those areas (generally larger jurisdictions), their interoperability level using the SAFECOM Continuum (seen in Figure 10, Section 4.9 of this SCIP) is at the highest level of interoperability within their jurisdictional environments. When agencies are called to assist other areas, or when requiring assistance from others, they rely on AIRS for communications. (AIRS is described in Section 4.0.2 of this report and is described in the SAFECOM Continuum as a Shared Channel Level Interoperability.)

Absent the areas in the state in which there are existing multi-jurisdictional and multi-disciplinary radio systems, Arizona does not typically use a common radio system, with the single exception of the AIRS network for emergency radio traffic. AIRS is fully interoperable and available to any jurisdiction or emergency responder no matter his discipline who has agreed to abide by the MOU governing system use.

Statewide Radio Network

Realizing the Arizona statewide radio network is not yet constructed, we will describe the anticipated process by which the system will become operational.

Technical testing

As each region of the system is turned on, there will be a complete technical testing of the system. The system will be checked for quality to ensure that it meets coverage requirements, functional requirements, public safety standards, and applicable security requirements to guarantee the integrity of the network.

Training

Training will commence prior to operational activation and shall be ongoing. This first phase of training will be directed at those will be charged with maintaining the radio system. To ensure the subject matter is appropriate, initial training will be the responsibility of the manufacturer

and included as a part of the contracted vendor proposal. Classes will be held so that key members of the state will be in a position to train others when the need arises through a train-the-trainer approach.

Operational testing

To ensure the system operates as expected, operational testing will commence after technical testing and will be conducted by those who have been trained on the system. The system must meet or exceed the functional specifications described in the Request For Proposal and the Bid Response.

Train the Trainer Program

As this is a statewide system, it will be imperative that a cadre of certified trainers be available around the state to provide continuing education as they train others on the proper use of the new radio system. For many users, this may be the first time they have used trunking technology, which brings special challenges and subsequent training requirements to many users.

Go-Live

Once the state is confident the system is operating properly and the necessary personnel are trained appropriately, the system will become operational. Activation will be accomplished regionally to limit potential complications and to determine the effects of each section of the system as it is made operational.

Planned Exercises (as appropriate)

Once the system is in place, it will be test it within a pre-arranged scenario to verify the system is operating correctly, that the personnel are trained sufficiently, and that if there are problems, they are identified and corrected in a controlled setting.

After-Action reports

To evaluate the training and gather lessons learned, a series of after-action reports will be generated. The purpose of these reports is to validate information and to identify, outline and perform necessary corrective action.

Re-training

As a result of the after-action report, it is likely that some additional training will be necessary. Any additional training modules will be created as required and will be made available for reuse.

Annual Certification

As the statewide radio system will utilize state-of-the-art technology to be refreshed throughout its lifecycle, it will grow in complexity and functionality, necessitating a yearly user recertification.

Measurements

The new statewide radio system will use computer-based technology located in a Network Operations Center that will measure, distribute, and control call volume through software applications. For the first time in Arizona, statistical measurements will be enabled on every radio call made through the new 700 MHz radio system.

As the new 700 MHz component of Arizona's overall interoperability solution is deployed, emergency responders will use the system on a daily basis. This system represents the highest level of interoperability on the SAFECOM Continuum (as seen in Figure 10, Section 4.0). Those agencies not operating directly on the statewide system will be able to operate as they do today and will be able to communicate with each other using their own networks and they will, on a regional basis, be able to link into the statewide radio system via a high-level network interface (gateway device), or by sharing channels with the state. This will afford them either a Gateway Level or a Shared Channel Level of interoperability level as measured by SAFECOM.

The PSCC promotes the concept of interoperability on a daily basis through an Outreach Program, open public meetings, as well as a user-friendly Website and a regular newsletter. Additionally, there is continued dialogue between the PSCC and the local agencies through dialogue with the agencies' representatives who serve on the Commission.

AIRS

The implementation process as described for the 700 MHz radio component of Arizona's interoperability solution is also true for AIRS. As AIRS is being re-defined, it will have all of the capabilities and requirements of training and exercises as the 700 MHz radio system. It is anticipated that AIRS will be handled in a manner similar to the statewide system.

The AIRS network affords the opportunity for any emergency responder to communicate with others as needed via a suite of fully interoperable, patched radio frequencies in the UHF, VHF,

and 800 MHz bands. Although AIRS is still under development, it is currently available in most areas of the state. By mid-2009, AIRS will be available statewide.

The AIRS Programming Guide is included in Appendix D

Strategy

Arizona has developed a strategy to achieve statewide interoperable communications. The strategy is included in Table 36 below.

Strategy Number	Strategy	Due date
1.1	Demonstration project for the 700 MHz Project 25 Radio System	April 2008
1.2	Use interoperability channels and capabilities for day-to-day interoperable communications	Mid-2008
1.3	Complete statewide microwave upgrade to digital	2013
1.4	Provide that access to interoperable communications capabilities is kept as simple as possible for end users (700 MHz Radio System)	2013

TABLE 36 - SHORT TERM STRATEGY FOR INTEROPERABILITY

4.5.2 INTEROPERABILITY FOR LOCAL, REGIONAL, TRIBAL, AND STATE EVENTS

Interoperability is leveraged daily to handle local incidents. It is used less regularly for incidents at the regional and state level, primarily because of each county's size. Unlike many states, Arizona has a relatively large landmass but few (15) counties. Events may be planned or unplanned. In most unplanned events, such as a police chase, the immediate need is created, and most often ends within a few minutes. In the case of a fire, the need often lasts longer. For planned events, such as the Super Bowl or the New Year's Eve festival in Tempe, other, more elaborate interoperability solutions can be designed.

The state has two ways of realizing interoperability in large-scale events, both planned and unplanned.

When an incident escalates beyond the local level and additional communications assets are required the local government can request the use of a command communications vehicle. There are six vehicles placed in strategic locations around the state to ensure the shortest response times. When deployed, the vehicles are staffed by NIMS-qualified Communications personnel. From the time a call is placed until the time this asset is deployed on location is generally within three hours. These vehicles all have the same equipment, which consists of the following:

- Cross-band communication device (ACU-1000)
- Full suite of radios, including VHF, UHF, and 700/800 MHz
- Satellite communications

- Generator
- One of these units is further equipped with living quarters on board that is available for extended periods of operation.
- The state also uses AIRS, which represents the primary, and most-often used form of interoperability in the state.

Frequency of use

There is no way to accurately measure AIRS usage in its present configuration. As designed and constructed, the network does not require an operations center and there is no managing software to measure and report on usage.

DEMA becomes aware of the use of the communications vehicles after they are notified by the local government entity who maintains them. Based on anecdotal information at this time, it is believed these vehicles are deployed approximately 10 to 15 times per year.

Frequency of Use for Localized Emergency Incidents

Based on anecdotal information, AIRS is used by local government on a daily basis. The use of other interoperable devices or processes is not monitored and is therefore unknown. In an attempt to determine AIRS usage County EOC directors, managers, and coordinators were asked if they had a way of determining how much AIRS was used. The limited information gathered is available in Table 34.

How often are interoperable communications capabilities used for regional incident management?

We asked local governments to discuss their interoperable communictions capability usage. The report is available in Table 34. There appears to be a need for interoperable communciations, however, as the only state asset for this communications is not capable of measuring call volumn hard data is not known at this time.

4.5.3 Procedures for Escalation and Obtaining Outside Support

When local government entities require outside support they follow the NIMS protocol. Specifically, a local government would contact the county government, which in turn would contact the state EOC. Should the state need additional resources, it would use the Interstate Emergency Management Compact (EMAC) and then turn to FEMA.

4.5.4 MUTUAL AID AGREEMENTS IN PLACE FOR SPECIFIC OCCASIONS

In addition to MAAs used for day-to-day operations, there are some agreements for specific functions including but not limited to: parades, marathons, golf tournaments, NASCAR races, Super Bowl, Tempe New Years Eve Celebration, Fiesta Bowl, etc.

Before each event, planners go through an extensive process attempting to determine every eventuality that could take place at the event or function. To the extent possible, MAAs are arranged with those parties who have a reasonable expectation of being required for the event.

4.5.5 INTEROPERABILITY USED FOR DISASTERS OR OTHER SIGNIFICANT EVENTS REQUIRING SUPPORT FOR REGIONAL, STATE, OR NATIONAL ASSETS

The state of Arizona has signed the EMAC. All counties within the state have signed MOUs with the state to provide emergency assistance when necessary within the state. When activated either within the state or outside of the state, NIMS is the protocol used for all communications, both within the operating environment and for interoperable communications with others. Table 10 outlines the disasters during which interoperability was used to support emergency assistance.

5.0 STRATEGY

5.1 INTEROPERABILITY VISION

Before AIRS, Arizona emergency service providers and their supporting organizations found themselves in a position of not being able to communicate with each other in times of emergency. This scenario would play itself out on a daily basis regardless of the size of the incident (two law enforcement units in a vehicular chase, or dozens of departments responding to an incident of magnitude.) Oftentimes communications barriers are created by incompatible technology or public service providers have not planned adequately to provide these communications. This lack of communications has caused needless delays in providing life-saving services to those who need them and puts the lives of public safety officials at risk by not giving them the lifeline they need to summon assistance while they are helping others. The PSCC has therefore created a vision addressing these shortcomings.

The vision for statewide interoperability is one that will enable any public safety official to be able to communicate with any other public safety official, "when their mission dictates, in real-time, and on demand[20]." This is not to say that every police officer should be able to communicate with every firefighter. Rather, it is the communications requirement as determined by a Unified Command Structure (a component of NIMS).

5.2 MISSION

The PSCC's mission for statewide interoperability is to enable the "seamless interagency and inter-discipline public safety communications without complicated processes or procedures for task force events, mutual aid incidents as well as day-to-day operations irrespective of agencies' technical systems[21]." This mission as defined by the PSCC aligns with the overall mission of this SCIP. This also helps to lessen the often-seen problem that the only way agencies are able to communicate with each other requires extraordinary processes that hinder field operations. The mission of the SCIP is to create a seamless inter-jurisdictional and inter-disciplinary fully interoperable radio system, for all public safety entities operating within the state of Arizona.

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[20] Public Safety Wireless Network (PSWN) publication *Why Can't We Talk.*

[21] PSCC mission statement

5.3 Goals and Objectives

To achieve this goal of statewide interoperability, the state is phasing in a new statewide wireless network in the 700 MHz band. Understanding the complications of undertaking such a project, the PSCC is simultaneously updating Arizona's existing microwave network and the AIRS network to encourage and enable connectivity of existing networks in pursuit of statewide interoperable communications.

By deploying both technologies, the state of Arizona will achieve Governor Napolitano's stated goal of 85% interoperability (by population) within two years. Although the interoperability will be somewhat rudimentary, it will provide basic communications for all public safety providers operating within the state. As the 700 MHz system is deployed, the level of interoperability will increase to enable the true vision of complete state interoperable communications.

Goals and Objectives Formulation

The PSCC recognizes the critical nature of planning for more than technology in solutions for a statewide interagency communications system and its supporting operations plan. In October 2005, the PSCC published its *Concept of Operations*, a non-technical document expressing the philosophy of the public safety officials of the Commission. Although technology and budget issues are always at the forefront of most interoperability projects, the PSCC called specific attention to the overarching need to address governance, ownership and management of large statewide or regional systems. The *Concept of Operations* also highlighted the importance of using SOPs to encourage regular, daily use of interagency communications, not simply during training operations or declared emergencies.

The PSCC is planning to deploy a fully interoperable radio system, that includes a standards-based 700 MHz radio system connectivity at a network level with other regional and local government radio systems in the state. The *Needs Assessment* determined the future and current needs to interoperate with modern, standards-based land mobile radio communications systems currently installed or being planned in various counties and cities within the state of Arizona.

The following are a series of goals and objectives that will be achieved in order to enable the goal of statewide interoperability in Arizona.

Goal: Achieve interoperable communications for 85% of the population within 2 years.

Objectives: In order to achieve this goal, the state must complete the AIRS build-out, and the

700 MHz demonstration project. With these two projects, 85% of Arizona's population will benefit from basic interoperability.

Goal: Publish an initial set of user-based standards and guidelines for technology consistent with the long-term strategy for agencies currently implementing changes.

Objective: This goal can be achieved by publishing and implementing the SCIP and other related documents for statewide implementation.

Goal: Create a scorecard to assess current interoperability activities occurring throughout the state and in adjoining states.

Objectives: By utilizing information gathered during the SCIP development process and use of CASM, a thorough understanding of interoperability initiatives has been gained. CASM also allows for continued validation of that understanding as well as a means to monitor and demonstrate progress.

Goal: Complete analyses and other data gathering efforts to feed follow-on activities.

Objective: After the SCIP is completed and embraced by the interoperable communications users, regular review and updating of the plan will be the foundation of future statewide strategies and activities.

Goal: Develop and implement a strategy for defining technical alternatives for the statewide solution.

Objectives: By completing the Conceptual Design process and report, the State will identify communications solutions and the benefits and drawbacks of those solutions, which in turn will be compared to the identified needs of all levels of users.

Goal: Establish an education and communications program defining interoperability, PSCC goals, and the path to the solution.

Objective: Create an Outreach Program for state and local entities that will educate political decision makers as well as system users. This approach will insure the dissemination of accurate information and uniformity of thought as well as encourage input from all entities to the project office.

Goal: Develop a current inventory of subscriber equipment to assist with scoping and funding the future solution.

Objective: The inventory that the state has of all of the radio systems is several years old, and has not been unpdated. As the two UASI and the state are planning to use CASM for their inventory and interoperablity assessment, the PSCC anticipates asking local, and tribal governments to enter their data into that database. With CASM a true, dynamic picture of the operating environment can be seen at any time.

Goal: Develop and implement statewide operational standards.

Objective: There are several instruments already in place that will collectively ensure all communications users seeking interoperability have the same operational guidelines and understandings. These instruments are the Conceptual Design document, the PSCC, the SIEC, the SCIP and the PSCC Support Office.

Goal: Aggressively identify and secure dedicated funding source(s).

Objective: Pursuit of funding will naturally be a high priority for the State. Identified funding sources are dedicated State funds; grants through DHS; and sources yet to be identified. To insure funds are available and appropriately applied, the PSCC will maintain oversight of fiscal issues.

Goal: Secure short- and long-term legislative support by the legislative bodies.

Objective: Legislative support is recognized as a priority for project success. To ensure the publically elected decision makers are fully informed on matters relating to interoperability, the Outreach Program will include components designed specifically to address the political bodies of government.

Goal: Assess and implement tactical improvements on a county-by-county basis to achieve quick wins to be communicated as progress.

Objective: The objective here is to encourage and assist local governments in successful improvements promoting quick regional success. These smaller projects will show accomplishments and will be improvements to statewide communications. Continual monitoring of local projects while conducting Outreach and CASM reviews will be the process to identify opportunities for these quick wins.

Strategy for Interoperability

The *ConOps* established a pathway toward interoperability that the PSCC has adopted as its guide. The following quotes pages 31-33 as the strategy for statewide interoperability:

Summary of Strategy for Achieving Statewide Interoperability in Arizona

> Based on the information presented in previous sections and the goals, constraints, and requirements related to achieving interoperability in the state of Arizona, an overall strategy was developed. The strategy, while uniquely crafted for the specific needs of Arizona, aligns with best practices recommended by industry sources. For instance, it includes all the best practices for interoperability strategy developed by the Public Safety Wireless Network (PSWN) Program (now formally part of SAFECOM). The four major best practices for interoperability strategy according to PSWN are listed in Table 37 below.

1)	Cultivate Political and Stakeholder Support
2)	Determine System(s) Planning Requirements
3)	Provide Education to Groups Within the state
4)	Coordinate the Activities of Multiple Agencies and Build Consensus

TABLE 37- PSWN BEST PRACTICES FOR STATEWIDE INTEROPERABILITY[22]

All of these activities, in addition to other key activities, comprise the strategy for the state of Arizona. The strategy can be summarized on two levels: short-term strategy and long-term strategy. Both components are described below and further described in Section 6, Key Milestones and Implementation Plan.

Short-term Strategy

In the short-term, which Arizona identifies as the next two to three years, it is imperative that the PSCC and its constituents aggressively pursue the county-by-county incremental improvements, gain several quick wins that can be actively communicated to stakeholders, and expands the influence of the PSCC itself. Addressing operational policies and procedures immediately, for instance, allows for significant progress while more time-consuming efforts, such as securing funding and procurement activities are executed in parallel. The short-term strategy for the PSCC to pursue is as follows:

- Publish initial set of user-based standards and guidelines for technology consistent with the long-term strategy for agencies currently implementing changes
- Create a scorecard to assess current interoperability activities occurring throughout the state and in adjoining states
- Complete analyses and other data gathering efforts to feed subsequent next activities of the statewide strategy
- Develop and implement a strategy for defining technical alternatives for the statewide solution
- Establish an education and communications program that defines interoperability, PSCC goals, and the path to the solution
- Develop inventory of subscriber equipment to assist with scoping and funding the future solution
- Develop and implement statewide operational standards

[22] Source: SAFECOM, http://www.safecomprogram.gov/SAFECOM/

- Aggressively identify and secure dedicated funding source(s)
- Secure short- and long-term legislative support by legislative body
- Assess and implement tactical improvements on a county by county basis to achieve quick wins that can be communicated as progress
- Establish/leverage the PSCC Governance subcommittee, the PSCC Funding subcommittee and the SIEC operational policies and procedures to address operation, governance, ownership, and funding strategies
- Encourage opportunities to share communications facilities and infrastructure among agencies
- Encourage pursuit of opportunities created by the PSIC grant process, the AIRS network, the 700 MHz solution, and the Governor's mandate to achieve interoperability for 85% of the population within two years.

Long-Term Strategy

Building off the achievements and momentum of the short-term strategy, the PSCC should employ a long-term strategy that achieves all of the requirements and objectives described in this document and supporting documentation. Long-term agreements to share facilities and infrastructure, increased cooperation and partnership in provision of public safety, and user-based standards for technology are a few of the long-term strategies that must be achieved. On realizing the long-term objective, the Mission and Vision of the PSCC will be achieved and public safety agencies within Arizona will finally experience seamless communication when helping the citizens of Arizona. As such, the long-term strategy, which spans years 3 through 8, is comprised of the following:

- Secure long-term funding support (e.g., capital for build-out, on-going maintenance requirements, and technology refresh)
- Define a long-term governance and ownership model
- Pilot an interoperable solution based on the new architecture to assess effectiveness and plan for statewide deployment
- Publish a full deployment plan and partially deploy a statewide, interoperable solution
- Deploy new microwave infrastructure
- Fully deploy the statewide, interoperable solution

Specific activities, milestones, durations, and dependencies to support the short- and long-term strategies are described in detail in Section 6. Execution of this two-tiered strategy provides the road map for interoperable communications and the increased

protection of life and property in the state of Arizona. However, to realize the strategy and put it into action, the funding strategy must be carefully and aggressively executed as defined in the next section.

5.4 Strategic Initiatives

The PSCC has a series of strategic initiatives, all of which support the eventual build-out of a 700 MHz fully interoperable radio system for the state of Arizona as a part of its overall interoperability solution. These initiatives are presented below reflecting project precedence as identified in the Public Safety Interoperable Communications Investment Justification process.

AIRS Deployment

As there is an immediate need for interoperable communications in the state, the PSCC is continuing to update and build out the AIRS suite of interoperability systems. Since this will allow immediate interoperability and will enable interoperability with others who may need to assist Arizona in times of an emergency, this system will create an immediate and long-lasting solution for interoperability in Arizona. Although AIRS currently has inadequate coverage, it is universally available today in many areas of the state to not only the emergency responders within Arizona, but to mutual aid resources from outside the state. By design AIRS is compatible with both existing and new technology.

Action Plan –

- State will conduct propagation studies to determine where additioal AIRS suites should be placed.
- Deploy existing AIRS suites to specified locations.
- Test AIRS to ensure technical specifications.
- Purchase additional equipment to mitigate coverage gaps.
- Deploy new AIRS suites
- Test the AIRS system with an exercise

Measurable results - Like other projects monitored by the PSCC, regular reports are presented to monitor project progress. The PSCC has asked the SIEC to also monitor this project and create a series of objectives and dates for completion.

Statewide Microwave Backbone Infrastructure Upgrade

To support the envisioned Project-25 700 MHz radio system, the state must first expand its

microwave ring. This three-phased approach has begun, and is planned to be completed in 2013. Technologically, the microwave system is the foundation for the new 700 MHz solution as well as the existing AIRS system. In some areas the current microwave equipment is 50 years old and no longer meets its requirements. The technology lacks capacity, does not support data and other modern applications because it is analog rather than digital and is obsolete.

Action Plan: The DPS has a plan in place outlining a three-phased approach for deploying a digital microwave system in support of the statewide radio system.

Measureable results - This project has three phases, each phase with specific goals and objectives. The PSCC monitors the progress of this project on a regular basis. Success is measured against a project plan, with milestones, goals, and completion dates.

Modern Regional Systems Enhancements

As the State continues to identify, design and construct the PSCC Long-term solution of a 700 MHz trunked radio network, local networks will continue to require maintenance and enhancement. To forward the goal of multi-user, multi-disciplinary applications and support a statewide solution, these local enhancements will be required to support regional network applications that are 700/800 MHz compatible and benefit multi-users in all disciplines including local, state, federal, tribal and non-governmental organizations.

Action Plan: As the statewide system is deployed, the PSCC and staff will continue discussing oppotunties to improve radio connectivity with local and trbal governments. This will be done via the PSCC news letters, PSCC and SIEC meetings and outreach plan.

Measurable results - As regional systems are improved they will have expanded coverage and capacities. There will be more agencies using AIRS, resulting in improved communications interoperability.

PSCC Long-term Solution (700 MHz Project 25 Component)

The 700 MHz Project 25 Project is scheduled for completion in 2013. When deployed, this 700 MHz system will enable interoperable communications in the most populated areas of the state. Since the project is guided by the Project 25 standards, users will benefit from industry defined compatibility requirements. This project will enable a common infrastructure that delivers low speed data in all places where voice communications will be available. The 700/800 MHz compatible network will provide coverage for the majority of Arizona's population and the emergency service providers who protect them. In 2008, a Demonstration

Project will provide a proof of concept for this technology before being deployed statewide. Action Plan:

- Deploy demonstration project
- Issue a request for proposal for the statewide system
- Issue contract to build system
- Implement system regionally
- Conduct technical training
- Conduct acceptance testing
- Conduct user training
- Deploy subscriber units

Measurable results - The overall project and the Demonstration Project are being monitored actively by the PSCC. Reports are presented to that body at every meeting and the PSCC is creating a series of easily monitored milestones.

Throughout this plan there are many references to a series of key issues that are part of the statewide plan. The following is a summary of the issues.

PSCC Long-term solution - High Level Network Connections Component

No matter if a government entity wishes to join the statewide radio system or if it wishes to remain independent, there will be a high-level network connection in place to enable that entity to communicate with other agencies when necessary. This interface may be established using any of several different methods, depending on ease of use, frequency of use, coverage area, system type, and so on. At the very minimum, interoperability will always be available for all agencies throughout the AIRS network. To promote statewide interoperability these connection opportunities will be available for regional systems only and they must be multijurisdictional and multidiscipline. These interconnections will connect older existing systems with newer, more advanced technologies and they will offer affordable solutions to gain immediate, albeit limited, interoperability. Connecting systems together through interfaces and gateways does not offer enhanced functionality such as trunking and data, nor does it improve existing coverage or offer system-wide roaming.

Action Plan: As the infrastructure to support additional connections to the statewide backbone is enhanced, the PSCC will update local and tribal governments. This will be done via the PSCC newsletters, PSCC and SIEC mailing lists and open meetings. Additionally, as the infrastructure is expanded changes to the SCIP are also apt to occur. Whenever there are

opportunities to enhance interoperability, effforts will be made by the PSCC to do so.

Measureable results – As more systems are interconnected, there will be more jurisdictions on the system.

Strategic Technology Reserve

Today, the state has several radio caches and radio equipment that can be used in a time of emergency. Even when the state migrates to the 700 MHz radio system, there will always be the need to have this equipment ready for those who may come into the state to provide assistance. Having caches and equipment strategically placed in areas of the state will therefore be advantageous to the state today and for the foreseeable future.

Action Plan: The state is still working on this section of the report – it will be completed once additional details are known.

Measurable results: The state is still working on the details of this section – additional information will be included in the final submission

Interstate and International Interoperability (Mexico/Four Corners)

Although the state is part of EMAC, which includes MOUs with each Border State, it is important that planning for emergencies continue in Arizona. These planning efforts should include our Border States and Mexico. Having the MOUs in place is the first step in creating a solid approach for interstate and international planning. Presently, there is an MOU between Sonora, Mexico and the State of Arizona. There are also MOUs in place with various federal agencies, such as the Border Patrol and Immigration Customs Enforcement (ICE).

The state of Arizona is in discussions with Colordo, New Mexico, and Utah (the Four Corners states). These discussions are being chaired by a tribal entity attempting to gain funding for a needs analysis in this region to detemine the best manner to create interoperable communications. Although all of the states mentioned in this section of the report currently work together via an EMAC agreement, this area is mostly in Navajo land and additional discussions and agreements are necessary.

Data Interoperability

The 700 MHz radio system will be a Project 25, standards-based system. Inherent with Project 25 equipment is low-speed data transmission capability. Presently, data is not a priority on the statewide radio system. Data is being transmitted on a 800 MHz radio system operated by the Arizona DPS. This data system supports both law enforcement and fire departments in many

areas of Arizona. As the 700 MHz radio system is deployed, it is likely that the footprint for the data system that is currently used in Arizona will expand with the system, as there will be additional capacity on the microwave system and 700/800 MHz frequencies for data are generally available in rural Arizona.

Catastrophic Loss of Communications Assets (Redundancy)

As mentioned earlier in this SCIP, the 700 MHz component of the state's overall interoperability solution relies on a series of other components to ensure its robustness. In addition to the basic technology, this system will have multiple layers of redundancy. For example, the microwave is based on a loop configuration, making it less vulnerable to a single point of failure. AIRS will always be a backup to the primary system and will be available to all levels of government. AIRS is monitored by the three Dispatch Centers operated by the Arizona DPS. Still another backup plan is the satellite phone system the state has deployed to enable between EOCs. DEMA has been permitted to use the Arizona Public Service (APS) trunked radio system for another EOC-to-EOC backup. Additional sources of back-up communications include accessing the various mobile command vehicles available across the state, coordinating Radio Amateur Communications Emergency Services (RACES) and Amateur Radio Emergency Services (ARES) personnel and equipment as well as assistance from the National Guard and their resources. Together, the statewide system will be redundant, resilient, and reliable for many years to come.

Major Transit

Throughout the state, there has been increased recognition of the need to include major transit systems in public safety planning processes. In Phoenix for example, the Regional Transit Security Working Group works regularly with the UASIgroup. Additional Regional Transit Security Working Groups are being formed in Tucson and Yuma, and these groups will continue to roll out across Arizona, as led by the efforts of the (federal) Transportation Security Administration (TSA). Should there be a need for a major inter-modal transportation effort, the TSA would coordinate that effort out of their Transportation Security Operations Center in Virginia. Arizona interoperates locally with transportation agencies via shared frequencies is many locations, or console patching in others.

Action Plan

- PSCC and SIEC will continue to invite the transportation sector to meetings.

Measurable results- The state will ask the TSA to be part of the SIEC mailing list and to

contribute to planning meetings. In subsequent revisions of the SCIP, TSA representatives, and representatives of the major transit agencies will be asked to participate.

5.5 National Incident Management System (NIMS) Compliance

On February 28, 2003, the President of the United States issued Homeland Security Presidential Directive (HSPD)-5, which directs the Secretary of Homeland Security to develop and administer NIMS. NIMS identifies many of the goals and objectives of a common interoperable communications network, mainly a clear and common understanding to improve the delivery of emergency services and incident management. Arizona embraces the national effort to standardize incident command.

5.5.1 State Plan NIMS-Compliant

The state plan is NIMS-compliant. By Executive Order EO2005-08, included in Appendix E of this SCIP, the Arizona DHS has oversight responsibilities to ensure state plans are NIMS compliant. Arizona DHS is a significant contributing agency for this plan. As Arizona's 700 MHz interoperable radio system is being built, participating emergency responders will be able to communicate when required to do so. Part of the state plan is to create an SOP that will include ICS and NIMS communications requirements. Until the state has implemented the 700 MHz Radio System, the state will continue use AIRS. Once fully deployed, the AIRS system enables an on-scene ICS that may be used by an Incident Commander (IC) to deploy their assets when and where they are needed. The IC then communicates with other Commanders, who in turn use their own radios to deploy their resources. The new 700 MHz network and the existing AIRS allows an Incident Commander to assign ICS roles and duties to incoming responders, as defined by NIMS, without concern for the individual's agency's communications frequencies.

5.5.2 Current Level of NIMS Compliance At All Levels of the State

In accordance with the Govornor's Executive Order and the Presidential Directive, every jurisdiction in Arizona, either by ordinance or by order of the county executive, has become NIMS- and ICS-compliant.

5.5.3 NIMS Requirements for Local Jurisdictions

As specified in 5.5.2 above, all jurisdictions are NIMS-compliant. The Executive Order directs the Arizona DHS and DEMA to:

- Incorporate NIMS into existing statewide training programs and exercises
- Institutionalize NIMS
- Provide and coordinate technical assistance to localities to ensure NIMS compliance
- Lead the effort to insure statewide NIMS compliance

5.5.4 Support and Leadership Provided to Tribal and Local Entities

Arizona DHS and DEMA provided and continues to provide all needed support and leadership to assist tribal national and local governments regarding NIMS compliance. To assist agencies in their compliance, DEMA regularly schedules NIMS training. Additionally, DEMA has outreach personnel who go to local and tribal entities to invite them the classes.

5.5.5 PSIC-Funded Equipment Enables NIMS-compliance

The state and local governments will only submit requests for PSIC funds for equipment enabling NIMS compliance. For example, the state will submit an investment justification for the following technologies, each enabling the statewide interoperable communications system:

- Microwave enhancements – From analog to digital, in three phases, to be completed in 2013. This will serve as the statewide radio systems backbone.
- Continued AIRS build-out – This suite of interoperable radio frequencies requires NIMS compliance to use this system. AIRS enables all responders to communicate with each other and to the Incident Commanders as they come into a coverage area, to be deployed offering assistance.
- Statewide build-out of the Project 25 700 MHz Radio System – This will assist local governments who have equipment that could work in this spectrum connect with the state radio systems. As the state radio system will require NIMS compliance, this will therefore support NIMS in the state.
- Assist local governments connecting to the state system but will not become part of the statewide network- This will require those who wish to join this network to become NIMS-compliant.

Arizona is making every attempt to assist those not currently fully NIMS-compliant to become so. To assist them, the state offers online classes, to encourage them, the PSCC requires NIMS compliance for each system they oversee.

5.6 Review and Update Process

Recognizing that the statewide interoperability plan is a dynamic, living document, the PSCC has created a review and update process involving the emergency responder community of interest.

5.6.1 Who chairs the review and cycle schedule

The PSCC Executive Director or his designee, at least once a year starting in August 2008, is tasked with ensuring proper review of the statewide interoperability plan. The frequency of this review may increase depending upon the current interoperable environment assessment and completed strategic initiatives.

5.6.2 Process to create a review committee

The PSCC Executive Director will publish in advance of the next regularly scheduled PSCC meeting an agenda with an agenda item to update the SCIP Plan as part of that agenda. Additionally, the PSCC sends notifications to the emergency responder community of interest advising its members of the upcoming meeting. A call for volunteers will be made to ensure the plan is vetted and reviewed by a representative sample of all jurisdictions and emergency responder disciplines in the state. The transmission letter will advise the recipients of the review's scope to help them understand the breadth of work required.

5.6.3 Appointment of the review committee

At the PSCC meeting, the PSCC chair will receive a recommendations report from the PSCC staff for the review committee. The PSCC chair shall assign accepted topics for review to the appropriate review committee member(s). The PSCC chair will also appoint a chair of the committee and provide a timeframe for the final report and recommendation to be completed.

5.6.4 Review of the Statewide Interoperability Plan

The Review Committee chair shall hold open public meeting(s) at times and locations accessible by those willing to participate in this review. The Chair will send a notice to all emergency responders, using the same process detailed in section 5.6.2 above.

Input to this plan is not to be limited to those appointed to serve on the committee; rather it is open to all who wish to attend and be heard. Additionally, the Committee may entertain written responses.

At the conclusion of the review, the Review Committee Chair or their designee shall prepare and present a report to the PSCC Chair including recommended changes to the SCIP. It will also include the opinions of those who made recommendations were not entered into the final draft of the amended plan.

This review and its associated report will then be sent to the PSCC Executive Director. The Director will review the plan and make a recommendation to the PSCC Chair.

5.6.5 Recommendations to amend the Statewide Interoperability Plan

During the next regularly scheduled PSCC meeting, the PSCC Chair will receive the report from

the Review Committee Chair and the PSCC Executive Director. During this open meeting, the suggested amendments will be discussed and approved or disapproved.

5.6.6 Revised statewide interoperability communications plan distribution

After receiving PSCC, approval the Revised Statewide Interoperability Communications Plan will be distributed in a manner as outlined in Section 5.6.2 of this plan. The revised plan will include a log that will indicate the following:

Change log

A change log will be kept that will record at a minimum the following information:

- Change number
- Date
- Description of change
- Effective date of change
- Signature

5.7 State Leaders and Policy Makers

State leaders and other policy makers are and will continue to be engaged in the administration of the SCIP. The Governor has directed that communications interoperability will be in place within two years covering 85% of the population of the state. She has expressed a desire to have the statewide land mobile radio system implementation within four years. Directors of state departments, local government as well as tribal governments and non-governmental agencies have been engaged in the operation of the PSCC and the creation of this SCIP. County, federal, tribal and municipal leaders serve on the five Regional Advisory Councils and will be directing the use of PSIC and other funds within their regions. It is imperative that the leaders of the state continue to be kept apprised of the progress of strategic steps and SCIP implementation and that they are educated and re-educated in the critical aspects of interoperability requirements.

5.7.1 Education of Policy Makers

Policy makers have been involved in the development of the SCIP and are acutely interested in the plans and actions that will enable their jurisdictions to achieve communications interoperability. As the strategies are refined and executed, these leaders will be informed of the plans and progress, and educated as to how these initiatives relate to them and their

jurisdiction, through the following methods:

- Participation in committees – The members of the PSCC, SIEC, and RACs include state, federal, tribal, and local leaders. These leaders direct the actions being taken to execute the SCIP and other initiatives to bring interoperability to the state.

- Representation in committees – Those members of the PSCC, SIEC, and RACs that are not policy makers serve on these committees at the request of their jurisdictions' or their community of interests. These members bring reports and updates to their policy makers and organizations to ensure that they are kept fully informed of the work, and progress of these important committees.

- Meeting minutes – The minutes of the PSCC, SIEC, and RAC meetings are posted on the Internet and distributed widely to local and state leaders, keeping them informed of the decisions and status reports made in the meetings.

- Newsletter – The PSCC issues a newsletter periodically describing the progress of the work toward interoperability.

- Personal contact – The duties of PSCC Executive Director includes visiting with policy makers and updating them on the progress of the Commission and other actions. Additionally, the PSCC will be working on a formal outreach program, that will futher the reach of the PSCC and SIEC.

- Open meetings – The PSCC, SIEC, and RAC meetings are widely publicized and open to the public. The PSCC and SIEC has an email distribution list of over 400 names and organizations. Governmental leaders are welcomed to attend.

5.7.2 Progress Reporting to Policy Makers

The policy makers must be apprised of the progress and success of implementing the initiatives through reports indicating performance measures. The reports are disseminated using the above listed methods and other ways yet to be determined. Thes performance measures below will be continually refined as the projects and actions are developed. The following are measurements of the progress as existing in this early stage of interoperability planning:

AIRS Deployment:

- The results of propagation studies to determine where additional AIRS suites should be placed
- The schedule to deploy existing AIRS suites to specified locations
- The meeting of the milestones of the schedule
- The results of technical specification acceptance tests of AIRS installations
- The decision and funding plans to purchase additional equipment to mitigate coverage gaps
- The schedule to deploy new AIRS suites to specified locations
- The meeting of the milestones of the schedule
- The results of technical specification acceptance tests of new AIRS installations
- The plans and results of testing the AIRS system with an exercise

State Microwave system enhancement

- Plans showing schedule and evaluation of enhancements to the system
- Funding cycles for the implementation
- Purchasing procedures being used
- Reports to the PSCC as enhancements are implemented
- Reports to the PSCC as partners join the system
- Status reports of testing and additional sites needed.

Regional System enhancements

- Plans and objectives of regional system enhancements
- Schedules
- The meeting of milestones of the schedule
- Purchasing procedures and awards
- Progress on the deployment
- Progress on the training of users, staff
- The results of technical specification acceptance tests

Long-term statewide land mobile radio system

- Studies and their findings toward needs assessment and system direction choice
- Conceptual design document
- Preliminary pricing

- State project investment justification process and approval
- Funding plans
- Purchasing plan
- Request for proposals, proposals delivered, and proposals evaluations results
- Project schedule
- Detailed design results
- Partner expansion
- Implementation major milestones completion
- Subsystem completions
- Subsystems testing results
- System loading deployment

High level regional network interconnections

- Report as to regional network identification and branding
- Initial memorandum of understanding development and execution
- Functional requirements of the interconnection
- Purchasing procedures to be used and results
- Progress status reports
- Notification of implementation
- Results of testing functional performance

Strategic Technology Reserve

- Evaluation of existing STR components
- Determination of additional STR components needed
- Funding plans
- Schedule of building STRs
- Progress of the meeting the schedule
- Purchase plans
- Deployment plans
- Results of deployment
- Results of testing STR components
- Plans to replenish STRs

6.0 IMPLEMENTATION

The PSCC has been active in leading the state's efforts toward improved emergency communications interoperability. Previous state-sponsored studies have resulted in real progress and interoperable systems continue to be implemented and have been credited with assisting agencies in high profile multi-agency operations.

6.1 SHORT TERM IMPLEMENTATION – AIRS

The implementation of the AIRS system began in early 2006 and continues to be built out according to the planning that occurred during 2004 and 2005. However, AIRS is not a permanent solution as it is based on IARS, which was planned and implemented during the early 1980s and has been serving law enforcement agencies for over two decades. The implementation will take place over a several year period as funding becomes available. The stages of this implementation are as follows:

AIRS Implementation

Design, Engineering, Planning	2004-2005
Installation begins	March 2006
Implementation of 45 AIRS suites complete	June 2008
Implementation of dispatch center components complete	June 2009
Installation of AIRS in subscriber units	2005-ongoing
Integration of AIRS with the statewide radio system	2012

6.1.1 SHORT TERM AND LONG TERM – MODERN REGIONAL SYSTEM ENHANCEMENTS

It is incumbent upon the local jurisdictions to enhance their regional networks. The state recognizes the importance of these networks and will support enhancement where possible and when appropriate.

Regional enhancements are ongoing	2004-present
Regional enhancements will continue for the life of the system	2012

6.1.2 Short Term and Long Term – State Microwave Backbone Infrastructure

Ongoing statewide – The Arizona DPS has been upgrading the statewide microwave system. This project is expected to continue until 2013.

6.2 Long term implementation –700 MHz radio system[23]

The leadership of moving toward improved interoperability can be credited to the individual agencies that formed the *ad hoc* committee that became the PSCC. Thereafter, the leadership of the PSCC as authorized by the Governor and State Legislature has carried interoperability further on the road to the statewide common infrastructure system as proposed today.

Implementation of the strategic initiatives (Section 5.4) is estimated to progress according the following schedule:

6.2.1 Governance

PSCC inception	2001
PSCC established officially	2004
PSCC and other state sponsored consultant studies	2004-2007
PSCC AIRS MOU	2005
Agencies agreeing to AIRS MOU (private and public agencies)	2005-2013[24]
PSCC Demonstration Project planning and coordination	2007-2008
PSCC-Phoenix-Mesa and PSCC-Yuma Demonstration MOU	2007
PSCC governance model planning	2006-2010

[23] As the long-term plans for the statewide 700 MHz system go from the design to the implementation phase, milestones, specific deliverable dates, and critical paths will be included in the program management documents.

[24] As the statewide plan is implemented, additional opportunities for participants will be identified. This will include opportunities to assist the state with governance, planning of SOPs, technical solutions, short- and long-term funding solutions.

PSCC statewide system governance committee(s) established	2010
Determine funding sources and secure funding	2008-2013
Completion of interstate procedures and systems	2012

6.2.2 PLANNING

PSCC and other state sponsored consultant studies	2004-2007
PSCC planning & design of AIRS	2005-2010
PSCC planning & design of statewide system	2006-2013
PSCC Demonstration Project planning and coordination	2007-2008
PSCC planning of training for technicians, managers of system	2007-2012
PSCC planning of training for users	2010-2013
PSCC governance model planning	2006-2010
PSCC statewide system testing planning	2008-2013
PSCC planning for cutover of and migration to statewide system	2008-2013

6.2.3 TECHNOLOGY

State Design, Engineering, Planning of AIRS	2004-2005
AIRS Installation begins	March 2006
Implementation of 45 AIRS suites complete	June 2008
Implementation of dispatch center AIRS components complete	June 2009
Installation of AIRS in subscriber units	2005-2010
DPS engineering of microwave system upgrade	2001-2012
DPS installation of digital microwave components	2004-2013
PSCC planning & design of statewide system	2006-2013
PSCC determination of statewide architecture	2007

PSCC Demonstration Project planning and coordination	2007-2008
PSCC-Phoenix/Mesa-Yuma implement demo project	2008
PSCC-Phoenix/Mesa-Yuma test demo project	2008
State issues Request for Proposals for statewide system	2008
Vendor selected for statewide system	2008
Statewide system delivery, install, test, cutover	2009-2012
PSCC training for technicians	2008-2012
PSCC training for managers of system	2009-2012
PSCC training for users	2010-2013
Integration of AIRS with the statewide radio system	2012
Statewide system cutover complete	2012
Abandoned frequencies relinquished	2013

Notes on the statewide system implementation from the August 2007 *Conceptual Design Report*:

Since the radio system will be in a radio band that is currently not occupied, the system can be built on any timeframe decided without the concern for displaced systems or users. Therefore, the entire system could be constructed, and then users migrated to it in a manner suitable to the users. (The alternative in an already occupied band requires users to be migrated from old systems/channels to an interim system/channel and them to the new statewide system. This would require an extreme effort in planning and a substantial expenditure for interim operations.)

Since the statewide system will be in a band not currently used, a portion of the system could be constructed and users placed on it even before the entire system is placed into operation.

Old systems can be tied to the new system to allow orderly migration of users without significant impact to their operations.

Public safety operations must not be affected and communications must not be interrupted

during any transition of systems.

The build-out of the statewide system is absolutely dependent on the DPS microwave and site upgrade project.

It is suggested that the sequence of implementation be as follows:

- A number of subscriber mobile and portable units for system testing
- Repeaters installed where digital microwave and site improvements have been already completed (provides a portion of the system for testing)
- Central controllers (and regional controllers, if needed)
- Inter-system links
- Dispatch centers (with old channels connected to the new consoles)
- Repeaters where early cut-over may be required
- Smaller users connection to the system
- Remainder of the repeaters
- Fill-in repeaters

Estimated installation times must be obtained from vendors and antenna riggers, but a preliminary estimate is as follows:

Antenna installation – 3 days per site
Radio install at sites – 2-3 days (assumes fully racked from vendor)
Radio/microwave interconnection and site testing – 1 day

Therefore, the estimated installation time for is one week per site for implementation.

Console and controller installation time cannot be estimated at this time.

6.2.4 TRAINING

PSCC education of PSCC commissioners about interoperability	2004-ongoing
PSCC education of agencies about AIRS & its operation	2005-2012
PSCC education of agencies and public about statewide system	2006-2013
PSCC planning of training for technicians, managers of system	2007-2012
PSCC planning of training for users	2010-2013
PSCC training for technicians	2008-2012

PSCC training for managers of system	2009-2012
PSCC training for users	2010-2013

6.2.5 Replacement Planning

PSCC Replacement life cycle determination	2007-2008
PSCC Replacement cycle plan	2008-2009
Replacement cycle fund establishment by governing board	2010

First cycle replacement (dependent on cycle plan)—Demo portables 2012

First cycle replacement (dependent on cycle plan)—Demo mobiles 2013

It is estimated that the replacement cycle will be 5-7 years for portables, 6-10 years for mobiles, 15 years for base station equipment and consoles.

6.3 Critical Factors for success

In any endeavor, having an idea of the final results helps to keep the program centered and allows all to understand what the effort is about. This SCIP provides a road map to interoperability that will ever evolving. Programs will be completed, initiatives will be implemented and interoperability will continually be enhanced. But new plans, programs, initiatives, subsystems, training, MOUs, SOPs, and other refinements will always be identified and developed. The SCIP will be revised and the new plans will be added.

Success factors for the accomplishment of this plan's objectives and goals include many things that are identified throughout this document. The deployment of AIRS stations covering the state's population, the ability for different jurisdictions users to roam into other systems or to be able to communicate with other jurisdictions, the fully deployed microwave network, the control of AIRS at state and local dispatch centers, and the deployment of STR caches as planned will all be indications of success.

Critical success factors include an effective governance body that manages the interoperability assets within the state. Another critical factor is the funding of the projects to the required level. Intersystem linkages will be required to bring interoperability to the standards-based common-infrastructure level. And education and training will be imperative to bring the systems and procedures a level of usability where they will be valuable on a daily basis to all

emergency responders in the state.

6.4 Point of Contact for Implementing This Plan

Mr. Curt Knight
Executive Director
Public Safety Communications Commission
Mail Drop 3450
PO Box 6638
Phoenix, Arizona
Telephone: 602.271.7400
Email: cknight@azdps.gov

The information above related to the implementation steps for the new statewide system is important, as it sets an expectation. However, critical to the success of the long-range plan is the establishment of the governing board. The board will champion partnerships between agencies and establish equitable policies. It will also determine future funding needs and financial participation needed for all agencies and will oversee implementation planning. The governing board is one of the most crucial elements in the implementation of interoperability in the state of Arizona.

6.5 Planning, Coordination, Acquire, Deploy, and Train on Interoperable Equipment

As the state continues to deploy its radio systems a training component will be developed to ensure that those using the equipment understand how to use it in the new environment. Additionally, those using this new technology must be trained on its use when they are in areas of the state that have not yet migrated to the new 700 MHz component of Arizona's interoperability solution. Although all of the details have not been completed, it is anticipated that training will include a curriculum approved by the PSCC and taught by DEMA. Additional technical training will be provided by the vendor for those requiring detailed technical training.

As important as it is to train those using the equipment it is just as important to ensure that all stakeholders, policy members and practioners understand what the current and desired future states of communications are within Arizona. It is for that reason that the PSCC is planning to create an outreach program, with a priority to ensure that all understand where the state is in

relationship to its long-term goal, how others can join the statewide movement, and keep policy makers and practioners alike aware of the steps being taken to improve communications in Arizona.

6.5.1 700 MHz Spectrum Use

The new statewide interoperability system will be a 700 MHz Project 25, standards-based trunked radio system. The use of the 700 MHz spectrum will include all frequencies that can be used for public safety within the state of Arizona. As it is likely that many features of this system will be new to most users, a statewide training program will be developed, as outlined above. Training on the system will be provided in phases and will commence in each region immediately before the new system is deployed and last through the implementation of the region.

6.5.2 Interoperability with Others

The PSCC has made its intentions clear that it will not leave any entity behind in its attempts to create a fully interoperable statewide network. To ensure that all jurisdictions, disciplines, and required non-governmental organizations (NGOs) are able to communicate with state resources and others on the new 700 MHz radio system, the state will deploy a series of high-level network connections. These connections will enable those who chose not to join the statewide system to communicate with those that are on the system when their missions dictate in real time and on demand. The specifics of these connections are unknown at this time, as the statewide system is still in its design phase.

6.6 Strategic Technology Reserve Implementation and Deployment

Arizona currently has a series of five communications vans strategically placed in each of the five RACs. The locations of these vehicles enable them to be called up and on scene generally within three hours. The vans are accessed either by a request to the agency operating the equipment or via a request to the State EOC following the NIMS protocol. Additionally, the state has a number of radio caches deployed using the same mechanism as described above. This strategic reserve serves the state marginally well, but must be augmented.

6.6.1 Satellite telphones for the Governor, Key Staff and Cabinet

In today's envornment, public safety officals have technology affording them the ability to communicate with each other when the need arises. The issue in Arizona, however, is that in times of emergency, the Chief Executive of the state and her key officers and Cabinet do not

have a reliable communications system either among themselves or between themselves and the agencies relying on them for decisions in times of emergency.

Satellite telephones would provide the governor and her staff the ability to communicate with each other and with public safety officals in Arizona should the need arise. This is important today, because there is currently no contigency for this issue. Additionally, even after the statewide radio system is built, should the governor be out of Arizona, she would lose the ability to communicate with her department heads and other staff if conventional means were to become unavailable.

This is important to Arizona today for the continuity of government in times of emergencies. Today, this capability does not exisit.

6.6.2 Cache of radios to support key state and local government

In past experience whenever there is an emergency situation in the state, the use of the public switched networks, cellular networks, and satellite networks quickly become overloaded. It is during these critical times, that the governor needs to communicate with her key staff memebers. This cache of radios would support emergency operations and the continuity of government when other means of communications fail.

6.6.3 Cache of Radios in Support of National Stockpile of Pharmacuticals

Arizona has a cache of pharmaciticals warehoused in the event of a pandemic. To assist in the distribution of these life-saving medications, a cache of radios are being sought to send to distribution centers to maintain communications with the pharmacitical centers. As many of these centers do not have communications in place today, this cache will create the communications needed, should this event take place.

6.6.4 Deployable Wireless Local Area Network with Cache of Wireless Laptops

Should access to the Internet fail during a time of national emergency, this plan creates a deployable satellite communications link and a cache of wireless laptops that could be deployed in case of emergencies.

6.7 Local and Tribal government entities needs included in this planning process

The PSCC has always conducted open, public meetings with the sole purpose of increasing participation from all interested parties, state, local, tribal, non-governmental entities, etc. This process has been constant since the inception of the PSCC and will continue. In addition

to the regularly scheduled meetings, additional forums have been conducted in the state to discuss this SCIP. Meetings were publicized, and all were encouraged to participate to ensure that their needs were identified and included in the plan.

All entities will be encouraged to continue their participation. In the present PSIC grant process, the state has developed workbooks and guidelines for local, tribal, and non-governmental entities to apply these funds in the advancement of the SCIP initiatives. These requests from non-state entities will be evaluated by the RACs, providing further opportunity for local and tribal participation.

Further, all of the initiatives have opportunities for all state, local, tribal, non-governmental, and federal entities to participate. The AIRS deployment needs participation by local agencies and dispatch centers. The microwave enhancement also permits locals to be interconnected for improved interoperability. The expansion of regional systems operated by local jurisdictions will provide larger footprints or improved capacity for emergency activities. The long-term statewide 700 MHz system encourages participation by non-state agencies and provides the ability for existing local or federal systems to be linked into it for higher levels of interoperability. The high-level network interconnection will permit the expansion of interoperable system areas by creating the system-of-systems concept of system development. The strategic technology reserves will be located throughout the state with the ability to be deployed to local or tribal agencies as needed, just as the current STR communications vans may be deployed to any local or tribal jurisdiction within three hours.

Arizona is unusual from most other states in the vast open spaces between areas of population. Assistance for disaster operations may take four to eight hours of response time to be transported from other jurisdictions. Local and tribal assistance will usually be the first available means. It is imperative that local and tribal, as well as federal, state, and non-governmental, entities all have interoperable communications, and this will be accomplished by all agencies participating in the initiatives of this SCIP.

6.8 NGO Needs Included in this Planning Process

As stated in Section 6.6 above, the needs of NGOs were solicited and included in this planning process. NGO representatives serve on the PSCC and SIEC Committees and these representatives have taken an active role in creating this plan through offering of information, review of draft copies, recommending additions, deletion and corrections and general participation.

7.0 FUNDING

7.1 BUDGET DETERMINATION

The statewide budget for the Arizona Interagency plan has not been fully developed as the state is still in the planning phase for this project. Once designed the system budget will be developed and published.

7.2 COMMITTED FUNDS

Since 2003 the Arizona DHS has expended approximately $22,800,000.00 on interoperability investments. The state of Arizona has committed funds to establish AIRS, the PSCC and the first phase of the statewide microwave system upgrade. Additionally, funds have been committed to pay for the demonstration project, which will determine the future of the statewide interoperability plan. The demonstration project is scheduled for completion in 2008. As the total budget for the 700 MHz interoperability system is unknown, only funds necessary for the demonstration project, the first phase of the microwave system and AIRS have been committed.

7.3 COMPREHENSIVE FUNDING STRATEGY

As stated in Section 7.0.1, the statewide system's budget has not been fully developed, and as such a comprehensive funding strategy cannot yet be determined. The PSCC is charged with developing the funding strategy when appropriate. The elements to be considered include: using federal grants and funding, using state general funds, user fees, local contributions, possible use of limited federal Highway Transportation funds, and new taxes. The PSCC will recommend a funding strategy to the Arizona Department of Safety, which will forward that recommendation to the Governor and Legislature for consideration.

7.3.1 PLANNED COSTS

The planned costs are currently under development.

7.3.2 IDENTIFYING FUNDING SOURCES

The PSCC does not actively solicit grant funding for its projects. Projects are typically funded either with State General Funds or by the use of grant funds, when the PSCC becomes aware of such an option. As the statewide project becomes more of a reality, additional emphasis will be placed on this activity.

7.4 FUNDING FOR STRATEGIC INITIATIVES

There are several strategic initiatives for which funding sources have been identified. These

initiatives include the three phases of upgrading of the state microwave system, the Demonstration Project for the statewide interoperability plan and funding for additional AIRS components. These initiatives will be funded in part with state general funds and in part with federal grants.

7.5 Source of Funds, Short-Term vs. Long-Term

For purposes of this report, short-term shall refer to initiatives from 1-3 years, while long-term shall refer to 3 years and beyond. To date, the only long-term funded project is the State Microwave Backbone Infrastructure upgrade project. The funding sources for this project are a combination of state and federal monies. As the 700 MHz radio project moves closer to determining actual costs, it is clear that there will be a marked difference between the funding mechanisms for short- and long-term projects. As long-term projects span multiple funding cycles, their funding streams must account for that issue and as the statewide radio project will include multiple jurisdictions, it is likely that user fees will supplement the state's level of funding.

7.6 Grant Applications

The state has applied for Homeland Security Grants to foster interoperable communications. It is anticipated that the state will continue to do so.

7.7 Funding for Communications Equipment Purchases, Maintenance, Upgrades

This PSIC grant includes investment justifications for communications equipment and upgrades. This equipment is necessary to promote interoperable communications in the state of Arizona.

7.8 Reimbursements for Emergencies

All state and local entities are reimbursed for expenditures they made while assisting others during a mutual aid deployment. This reimbursement would include, for example, a county deploying a communications van to another county. The responding jurisdiction would be entitled for all expenses including (and not limited to) those for the vehicle, the driver, the technician, repair to damages sustained during deployment, and any other reasonable expenses because of the deployment.

7.9 Funding for the Statewide Coordinator

The state of Arizona, understanding the need for a statewide coordinator for interoperable communications, has funded this position for the last seven years. It is likely that the funding for this position will be part of the funding package requested by the state.

7.10 Expenses by the Committee

Expenses incurred by the PSCC are reimbursable pursuant to the enabling legislation creating this group. Expenses for the SIEC are not reimbursable.

7.11 Expenses for Training and Evaluation

If training is a DHS requirement, all expenses for that training will be paid by DHS. Other training is the responsibility of the governmental agency requesting the training.

7.12 Ensuring PSIC-Funded Equipment Complies with the State Plan

Before any grant monies is approved, an *ad hoc* committee comprised of radio technology subject matter experts will be createdand tasked with reviewing the all of the grant applications submitted to the state. The Committee will ensure the technologies entities are requesting will comply with the statewide plan. Once approved, equipment may then be purchased by the local jurisdiction. These purchases will be reimbursed only if the equipment ordered was approved by the committee.

7.12.1 Ongoing Funding of PSIC-funded Equipment

All ongoing funding for both operation and maintenance or upgrades of equipment purchased with PSIC funds will be the responsibility of the entity receiving the equipment.

8.0 CLOSE

The Arizona SCIP provides an overview of the state of Arizona, its demographics and geographic features. It also describes the state's emergency response community, current radio systems, current operations standards and protocols, and its overall plan for the future. It is the state's goal to provide a SAFECOM "standards-based common infrastructure" level of interoperability to all public safety agencies and entities by the year 2013, as well as a means for providing interoperability for those local, county, tribal and non-governmental entities not wishing to join the common infrastructure. This new system will provide seamless compatibility with every regional or metropolitan infrastructure for additional interoperability

8.1 NEXT STEPS

The PSCC and SIEC will oversee the establishment of a governance board for the new interoperability system to institute policies, SOPs, and a revenue stream to fund its continued operation and eventual replacement. All measures taken, such as demonstration projects, the AIRS network, microwave upgrade, and current procedures based on NIMS and other protocols, will be intended to move the state toward this goal.

The state will continue to apply for grants and legislative funding with the sole purpose of achieving the "standards-based common infrastructure" level of interoperability required to safeguard the lives and property of the citizens of Arizona. As funding becomes available, the AIRS network will be expanded and its coverage will be improved. The state microwave network will be upgraded from analog to digital, link by link. Dispatch centers will be upgraded to accommodate the statewide system and AIRS dispatching. The 700 MHz sites will be installed. The statewide system will be brought on line under the care and management of a governing board, under the direction of the PSCC.

APPENDIX A - ACRONYM GLOSSARY

ACJC	Arizona Criminal Justice Commission
ADEM	Arizona Department of Emergency Management
ADOT	Arizona Department of Transportation
AFL	Arena Football League
AFOG	Arizona Field Operations Guide
AIRS	Arizona Interagency Radio System
AOHS	Arizona Department of Homeland Security
APCO	Association of Public-Safety Communications Officials
APS	Arizona Public Service
ARES	Amateur Radio Emergency Services
ASU	Arizona State University
CAP	Central Arizona Project
CASM	Communication Assets Survey and Mapping
CBRN	Chemical, Biological, Radiological and Nuclear
COML	Communications Unit Leader
COMT	Incident Communications Technician
DEMA	Department of Emergency and Military Affairs
DHS	Department of Homeland Security
DOC	Department of Corrections
DPS	Department of Public Safety
EMAC	Emergency Management Compact
EMS	Emergency Medical Services
EMSCOM	Emergency Medical Services Communications

EOC	Emergency Operations Center
F	Fahrenheit
FBR	Fred Billings Ramsey Group, Inc.
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
HazMat	Hazardous Materials
HSPD	Homeland Security Presidential Directive
IARS	Interoperable Arizona Radio System (Predecessor to AIRS)
IC	Incident Commander
ICE	Immigration Customs Enforcement
ICS	Incident Command System
ICTAP	Interoperable Communications Technical Assistance Program
IGA	Intergovernmental Agreements
ISSI	Inter-Sub-system Interface
JDRF	Juvenile Diabetes Research Foundation
kHz	Kilohertz
MAA	Mutual Aid Agreements
MACS	Multi-Agency Coordination System
MCC	Multi-Agency Coordination Center
MHz	Megahertz
MLB	Major League Baseball
MOU	Memorandum of Understanding
MS	Multiple Sclerosis
NAFTA	North American Free Trade Agreement
NASCAR	National Association for Stock Car Auto Racing

NAU	Northern Arizona University
NBA	National Basketball Association
NFL	National Football League
NGO	Non-Governmental Organizations
NHL	National Hockey League
NIMS	National Incident Management System
NOAA	National Oceanic and Atmosphere Administration
NPSPAC	National Public Safety Planning Advisor Committee
NRP	National Response Plan
PIO	Public Information Officer
POC	Point of Contact
PSAP	Public Safety Answering Point
PSCC	Public Safety Communications Commission (originally "Committee")
PSIC	Public Safety Interoperable Communications
PSWN	Public Safety Wireless Network
RAC	Regional Advisory Council
RACES	Radio Amateur Communications Emergency Services
RPC	Regional Planning Committee
SAIC	Science Applications International Corporation
SCIP	(Arizona) Statewide Communications Interoperability Plan
SIEC	Statewide Interoperability Executive Committee
SOP	Standard Operating Procedure
SR-NN	State Roadways (State Route *NN*)
STR	Strategic Technology Reserve
SWAT	Special Weapons and Tactics

TIC Plan	Tactical Interoperability Communications Plan
TOPOFF	Top Officials exercise intended to test the nation's readiness to deal with large-scale terrorist attacks.
TSA	Transportation Security Administration
UASI	Urban Area Security Initiative
UHF	Ultra High Frequency
US-NN	Federal roadways (U.S. Route *NN*)
VHF	Very High Frequency
WMD	Weapons of Mass Destruction
WNBA	Women's National Basketball Association
YMCA	Young Men's Christian Association
YRCS	Yuma Regional Communications System

APPENDIX B - COMMON EXPRESSIONS AND TERMS

SAFECOM	Communications program of the Department of Homeland Security's Office for Interoperability and Compatibility that, with its Federal partners, provides research, development, testing and evaluation, guidance, tools, and templates on communications-related issues to local, tribal, state, and Federal emergency response agencies.
Continuum	SAFECOM Communications Interoperability Continuum
CONV	Convention radio system – fixed frequencies
TRUNK	Trunked radio system – frequency assignment is chosen through computer programs to maximize available capacity. Groups of users are given a logical talkgroup to share for their communications, rather than a dedicated radio frequency.
P-25	Project 25 – industry fleet of standards pertaining to modern digital radio systems.
CANAMEX	In the State of Arizona, the **CANAMEX** Corridor shall generally follow-- (i) I-19 from Nogales to Tucson; (ii) I-10 from Tucson to Phoenix; and (iii) United States Route 93 in the vicinity of Phoenix to the Nevada Border.
WAVE 4	Wave 4 begins with a three-month voluntary negotiation period where identified licensees in the affected regions can reach an agreement with Nextel on the details of relocating.
ConOps	Concept of Operations, this is a report that can be found at http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf
Narrowband	Refers to a situation in radio communications where the bandwidth of the message does not significantly exceed the channel's coherence bandwidth. It is a common misconception that narrowband refers to a channel which occupies only a "small" amount of space on the radio spectrum.

Citizen Corps	Network of volunteer efforts to prepare local communities to effectively prevent and respond to the threats of terrorism, crime, or any kind of disaster
Interoperability	The ability of public safety officials to share information via voice and data signals on demand, in real time, when needed, and as authorized.
Incident	An event of occurrence requiring the participation and coordination of more than one public safety first responder agency requiring the services of more than one agency.

APPENDIX C- STATEWIDE INTEROPERABILITY COORINDATOR

Office for Interoperability and Compatibility
U.S. Department of Homeland Security

Homeland Security

Statewide Interoperability Coordinator: A Key to Success in Developing and Implementing Statewide Interoperability
April 2007

DRAFT

Executive Summary

The primary barrier to interoperability is not a lack of technology or communications systems, as many believe. The main obstacle is insufficient coordination between state agencies, localities within the same region, and emergency response agencies within the same jurisdiction.

It has become increasingly clear to the emergency response community that one organization alone cannot solve the riddle of communications and interoperability. The solution requires a partnership among local, tribal, state, and Federal emergency response organizations and industries. An effective interoperable communications effort will require full-time coordination, and a clear, compelling statewide strategy, focused on increasing the effectiveness of emergency response across all related organizations and jurisdictions.

This paper outlines the importance of a full-time Interoperability Coordinator position for every state. It discusses the critical role this position would play in developing and implementing an effective statewide interoperability solution.

Background

According to Section I.C.5 of the 2006 Homeland Security Grant Program, all states are required to develop and adopt statewide communications interoperability plans by November, 2007. To assist in this process and to ensure that all states develop strong, practitioner-driven plans, SAFECOM developed criteria of essential components to be included in a statewide plan. Put together with input from local and state emergency response practitioners, the criteria help ensure the development of statewide plans that meet the needs of end users. The criteria were released as part of the Department of Homeland Security (DHS) 2007 Homeland Security Grant Program.

The criteria are divided into sections that match the lanes of the communications Interoperability Continuum. The SAFECOM program designed the Interoperability Continuum to help the emergency response community, and local, tribal, state, and Federal policy makers, address critical elements for success as they plan and implement interoperability solutions. These include governance, standard operating procedures (SOPs,) technology, training and exercises, and usage. [25] Five additional areas of the criteria are: background and preliminary steps, strategy, methodology, funding, and implementation.

Section 1.3 of the Statewide Planning Criteria states that: “DHS expects that each state will

[25] SAFECOM Continuum may be found at www.safecomprogram.gov.

have a full-time Interoperability Coordinator. The coordinator should not represent any one particular agency and should not have to balance the coordinator duties with other responsibilities."[26]
The statewide planning process, including the documenting and implementing of statewide plans, greatly enhances the safety and security of our communities. Each state has ownership over its statewide plan, and is ultimately responsible for its relevance and success. Each statewide plan will be as unique as each state or territory.

Many states already have a single POC designated as the person responsible for managing the statewide planning process. However, in many cases this is not a full-time, paid position and the POC has responsibilities for other duties. For states to undertake the creation of optimal interoperability solutions, therefore, a full-time independent Interoperability Coordinator position is needed.

Responsibilities and Benefits of the Interoperability Coordinator

The primary responsibilities of the Interoperability Coordinator are to:

Oversee the development of a bottom-up, practitioner-driven interoperability strategy.

Establish and maintain a governance structure.

Ensure the development and implementation of the statewide communications interoperability plan.

Coordinate interoperability communications investments for the state.

In addition, other responsibilities may also include (but are not limited to):

Serve as liaison among the local, tribal, and regional emergency response communities, and state agencies and officials, and the Federal Government.

[26] The Statewide Planning Criteria can be viewed on the SAFECOM Web site at:

https://www.safecomprogram.gov/SAFECOM/statewideplanning.

Revise the statewide plan as needed.[27]

Ensure proper representation within the interoperability governance structure.

Develop and measure long-term and annual performance measures to show progress towards improved interoperability.

Serve as liaison between the communications interoperability committee and other groups.

Spearhead funding support for interoperability efforts.

An Interoperability Coordinator will improve the prospects of achieving voice and data communications interoperability, no matter where the state is in developing or implementing its statewide plan. For states that are just beginning to develop their statewide plans, the Interoperability Coordinator will play a critical role in establishing a practitioner-driven governance structure—the first step in the development of these plans. As the process shifts from planning to actual execution, ambiguity in leadership and accountability could arise. The Interoperability Coordinator has the responsibility for putting the plan into effect and for resolving such ambiguity.

Additional benefits of an Interoperability Coordinator can be to:

Serve as neutral broker among all stakeholders.

Encourage the implementation of voice and data interoperability standards.

Designate 100 percent of his or her time to coordination efforts.

Obtain funding to ensure program sustainability.

Serve as an executive champion for the state's interoperability efforts.

A Best-Practice Model
Virginia was the first state or commonwealth in the nation to adopt a locally driven strategic plan for enhancing voice and data communications interoperability. Today Virginia is viewed as

[27] Under the DHS 2006 Homeland Security Grant Program, states will need to submit statewide plans at least every three years.

a best-practice model to assist other states with their interoperability planning efforts.
Virginia attributes its success to three main factors that created a favorable interoperability environment:
A full-time interoperability coordinator
A solid governance structure
A statewide strategy and vision for communications interoperability
Former Governor Mark Warner created the position of the Commonwealth Interoperability Coordinator (CIC)[28], with the understanding that the responsibility of managing the Commonwealth's statewide planning process is critical and complex. The Coordinator is responsible for coordinating and managing the state's interoperability effort. This position, originally part of the Office of the Secretary of Public Safety, was recently moved to the Governor's Office of Commonwealth Preparedness. This transition increased the public profile of interoperability efforts, and afforded the Coordinator more direct access to leadership across all levels of government.
Virginia's experience demonstrates the importance of making the interoperability coordinator a full-time, neutral broker and locating the position at a level that enables the coordinator to work with leadership in all agencies.
Funding
According to the 2007 State Homeland Security Program (SHSP), states may use 15 percent of the SHSP grant funds to fund the position of statewide Interoperability Coordinator.[29] In addition, funding opportunities may be available through the Public Safety Interoperable Communications (PSIC) Grant Program.
In most cases, states will need to make an initial financial investment to create a full-time, statewide Interoperability Coordinator. However, as demonstrated by Virginia's Interoperability Coordinator, this position can pay for itself many times over through the leadership and coordination that it provides.

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[28] This position was initially supported with funding from the National Institute of Justice's CommTech Program and the Department of Homeland Security's SAFECOM program. To learn more about interoperability in Virginia, visit http://www.interoperability.virginia.gov/index.html.

[29] Refer to SHSP Section C.6 Personnel (page 46), and Chapter III, Section E.6 Personnel (page 36), for guidance. http://www.ojp.usdoj.gov/odp/docs/fy07_hsgp_guidance.pdf.

APPENDIX D – AIRS PLANS AND POLICIES

The following pages show the AIRS Plan and frequency standards:

- The Arizona Interagency Radio System (AIRS) State Plan (4 pages)
- VHF Minimum Equipment Standards
- AIRS Channel Assignments
- UHF Minimum Equipment Standards
- Radio Programming Guide

ARIZONA INTERAGENCY RADIO SYSTEM (AIRS)
STATE PLAN

PURPOSE

The Arizona Interagency Radio System (AIRS) is designed to provide interoperable communications capability to first responders of police, fire, and EMS agencies, as well as other personnel of municipal, county, state, tribal, federal agencies and approved non-governmental organizations (NGO's) performing public safety activities. This system operates on designated interoperability frequencies.

These radio frequencies are to be used in the event of a multi-jurisdictional operation requiring the use of the common state radio channel(s), specifically for the use of coordinating activities during identified incidents. AIRS frequencies are not to be used by a single agency for routine public safety operations.

The Arizona Statewide Interoperability Executive Committee (SIEC) shall serve as the state plan governing entity.

DEFINITIONS

AIRS:	Arizona Interagency Radio System (Previously known as AERS - Arizona Emergency Radio System)
FCC:	Federal Communications Commission
IC:	Incident Command. The overall authority and control for the incident.
ICS:	Incident Command System
Incident:	An event or occurrence requiring the participation and coordination of more than one public safety first responder agency requiring the services of more than one agency.
Interoperability:	The ability of public safety officials to share information via voice and data signals on demand, in real time, when needed, and as authorized.
MOU:	Memorandum of Understanding
NGO:	Non-governmental organizations. NGO's are considered field users and shall adhere to field user responsibilities as defined herein.
NIMS:	National Incident Management System

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Plain Language:	Common English used to convey the message without the use of radio codes.
PSAP:	Public Safety Answering Point. A Public Safety Answering Point is also known as a 9-1-1 Center, Dispatch Center, or Fire Alarm Office (FAO), where public safety radio and telephone communication services are provided 24 hours, 7 days per week.
SIEC:	Statewide Interoperability Executive Committee
System Failure:	Anything that interrupts the flow of communications or limits the communications within the situation.

ELIGIBILITY FOR PARTICIPATION

1. Governmental agencies and NGO's, utilizing mobile and portable two-way radios, operated by personnel actively engaged in incident-related activities, are eligible to apply for operating authority.

2. Each participating agency shall be responsible for maintaining a Memorandum of Understanding with the SIEC for operation on the appropriate AIRS frequency.

3. By federal statute, federal agencies are required to obtain permission to use the AIRS frequencies through the National Telecommunications and Information Administration, unless a supporting agency provides all the mobile radios for the federal agency's use.

OPERATIONAL GUIDELINES

Channel Use

The established priority-use levels for the system are described below. When a higher priority of use is required, all lower priority use must cease in ANY area where interference could occur.

The four priority levels are:

PRIORITY 1:	Disaster and extreme emergency operations of large scale; for mutual aid and interagency communications.
PRIORITY 2:	Emergency or urgent operations involving imminent safety of life or property.
PRIORITY 3:	Special event control activities, generally of a pre-planned nature, and involving joint participation of two or more agencies.
PRIORITY 4:	Drill, maintenance, and test exercises.

Communication Center Responsibilities

1. General Responsibilities
   a. Continuously monitor AIRS channel
   b. Provide communication center staff training
   c. Conduct periodic documented testing of AIRS

2. Incident Communications Center Responsibilities
   a. Monitor and respond on AIRS channel(s)
   b. Maintain dispatch documentation
   c. Record audio and telephone traffic of event
   d. Coordinate other agency unit response as requested or necessary
   e. Resume general AIRS operations and notify involved agencies at termination of incident.

3. Contingencies for System Failure
   a. The primary dispatch communication center shall attempt alternate communication methods.
   b. If the primary dispatch center is unable to establish alternative communication methods, dispatch responsibilities will be transferred to the next appropriate communication center.

Command and Control Responsibilities

1. Incident Command Responsibilities
   a. Establish ICS or NIMS protocol.
   b. Identify IC and notify incident Communication Center. Under normal conditions, the agency initiating the request for interagency assistance shall assume incident command. Should the initial agency become unable to continue as IC, command will transfer to the next appropriate agency.
   c. Identify nature of incident and request appropriate resources.
   d. Utilize state plan priority levels to identify need.
   e. Identify other support channels to be utilized for ICS or NIMS.
   f. Use plain language, avoiding agency-specific radio codes.
   g. Provide periodic update to Communications Center.
   h. Enforce radio discipline.
   i. Advise when incident is terminated.
   j. Conduct briefing of planned events. Attendees should include operational and support representatives from all involved agencies.
   k. Conduct debriefing with operational support representatives involved in the incident.

2. Contingencies for System Failure
   a. The IC shall establish a plan for alternative communication methods in the event of a system failure.

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Field User Responsibilities

Field Users shall:

1. Operate within ICS or NIMS protocol.
2. Identify themselves by agency name and call sign (DPS200 or Mesa Fire Engine 201).
   a. Agencies without calls signs should identify by organization and individual's name (Red Cross, Jones).
   b. Nothing in this policy should preclude pre-planned, site specific/incident assignment calls signs.
3. Keep radio traffic to a minimum and use plain language.
4. Be available on the assigned channel.
5. Contingencies for System Failure
   a. Field Users shall follow the established IC alternative communication plan.

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STATEWIDE INTEROPERABILITY EXECUTIVE COMMITTEE

TITLE: VHF MINIMUM EQUIPMENT STANDARDS DATE January 23, 2007

POLICY # 06-001 REV # 1.1

Replaces Policy # 06-001 rev 1.0

The Arizona Statewide Interoperability Executive Committee (SIEC) continually works to develop guidelines, recommendations and standards intended to promote public safety interoperable radio communications for all Arizona first responders.

The SIEC has standardized certain radio features, nationally recognized to promote and maintain a higher level of interoperable communications among and between public safety jurisdictions and disciplines. All public safety agencies are strongly encouraged to meet or exceed these minimum qualifications when purchasing mobile and portable radio equipment. The SIEC recommends all *equipment purchased through Homeland Security* grants be required to meet no less than these minimum qualifications.

VHF MOBILE – PORTABLES MINIMUM STANDARDS

MINIMUM CHANNEL	CHANNEL DISPLAY	FREQ RANGE	NARROWBAND CAPABLE	PROJECT 25 CAPABLE
48 CH OR GREATER	7 CHAR OR GREATER	150MHz-174MHz	REQUIRED	UPGRADEABLE REQUIRED

STATEWIDE INTEROPERABILITY EXECUTIVE COMMITTEE

TITLE: Arizona Interagency Radio System (AIRS)
Regional Channel Assignments

DATE January 23, 2007

POLICY # 06-003

REV # 1.2

Replaces Policy #06-003, Rev. 1.1

AIRS REGIONAL CHANNEL ASSIGNMENTS

*Refer to Arizona Statewide Interoperability Executive Committee (SIEC) Policy #07-005 (Subscriber Programming Guide) for detailed radio programming information.

APPENDIX E – EXECUTIVE ORDER 2005-08

Executive Order 2005-08

DESIGNATION OF THE NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS) AS THE BASIS FOR ALL INCIDENT MANAGEMENT IN ARIZONA

WHEREAS, in Homeland Security Presidential Directive, the President of the United States directed the Secretary of the Department of Homeland Security to develop and administer a National Incident Management System (NIMS) that would provide a consistent nationwide approach for Federal, State, local, and tribal governments to work together more effectively and efficiently to prevent, prepare for, respond to, and recover from domestic incidents of any cause, size, or complexity; and

WHEREAS, it is necessary and desirable that all Federal, State, local, and tribal emergency agencies and personnel coordinate their efforts to effectively and efficiently provide the highest levels of incident management; and

WHEREAS, to facilitate the desired levels of incident management, it is critical that Federal, State, local, and tribal organizations use standardized terminology, standardized organizational structures, interoperable communications, consolidated action plans, unified command structures, uniform personnel qualification standards, uniform standards for planning, training, and exercises, comprehensive resource management, and designated incident facilities during emergencies or disasters; and

WHEREAS, the NIMS standardized procedures for managing personnel, communications, facilities and resources will improve the State's opportunities for federal funding to enhance local and state agency readiness, maintain first responder safety, and streamline incident management processes; and

WHEREAS, federal guidelines for homeland security grant funding for federal fiscal year 2006 and beyond require NIMS compliance as a condition of eligibility; and

WHEREAS, the National Commission on Terrorist Attacks (9-11 Commission) recommended adoption of a standardized Incident Command System;

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. The National Incident Management System (NIMS) shall be the State standard for incident management.

2. The Arizona Office of Homeland Security (AOHS) and the Arizona Division of Emergency Management (ADEM) shall lead NIMS implementation throughout Arizona.

3. AOHS shall be charged with:

    a. Incorporating NIMS into existing statewide training programs and exercises;

b. Seeking federal preparedness funding sufficient to support NIMS implementation;
c. Incorporating NIMS into emergency operations plans;
d. Promoting intrastate mutual aid agreements;
e. Providing and coordinating technical assistance to local entities regarding NIMS to ensure statewide compliance;
f. Institutionalizing the use of NIMS; and
g. Leading the effort to achieve statewide NIMS compliance to ensure continued eligibility for federal homeland security grant funds.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.

GOVERNOR

DONE in Phoenix, Arizona this 29th day of March Two Thousand Five and of the Independence of the United States the Two Hundred and Twenty Ninth.

ATTEST:

SECRETARY OF STATE

APPENDIX F – AIRPORT OPERATIONS

Airport	Aircraft Operations/Year
Avi Suquilla	10,220
Bagdad	996
Benson Municipal	1,236
Bisbee Douglas International	14,600
Bisbee Municipal	5,148
Buckeye Municipal	40,150
Casa Grande Municipal	98,550
Chandler Municipal	223,745
Chinle Municipal	7,665
Cibecue	20
Cochise College	55,115
Cochise County	7,300
Colorado City Municipal	5,356
Coolidge Municipal	6,448
Cottonwood	18,615
Douglas Municipal	7,665
Eagle Airpark	16,060
Eloy Municipal	15,330
Eric Marcus Municipal Airport	300
Ernest A Love Field	272,655
Estrella Sailport	20,075
Falcon Field	269,735
Flagstaff Pulliam	56,210
Flying J Ranch	1,768
Gila Bend Municipal	13,870
Glendale Municipal	132,495
Grand Canyon Bar Ten Airstrip	1,768
Grand Canyon Caverns	116,435
Grand Canyon West	154,760
Grande Canyon National Park	116,435
Greenlee County	7,300
H A Clark Memorial Field	8,030
Holbrook Municipal	3,640
Kayenta	1,976
Kearny	2,600
Kingman	61,320
Lake Havasu City	51,100
Laughlin/Bullhead International	32,850
Marana Regional	89,790
Marble Canyon	2,340
Nogales International	31,025
Page Municipal	18,980

Payson	41,975
Pearce Ferry	300
Phoenix Deer Valley	378,505
Phoenix Goodyear	136,145
Phoenix Regional	N/A
Phoenix Sky Harbor Intl	546,040
Pinal Airpark	10,585
Pleasant Valley	74,825
Polacca	900
Rolle Airfield	3,016
Ryan Field	164,980
Safford Regional	8,760
San Carkis Apache	3
San Manuel	14,235
Scottsdale	224,475
Sedona	50,005
Seligman	1,092
Sells	1,196
Show Low Regional	33,945
Sierra Vista Municipal	116,070
St Johns Industrial Air Park	14,235
Stellar Airpark	39,055
Sun Valley	14,235
Superior Municipal	200
Taylor	2,704
Temple Bar	1,872
Tombstone Municipal	336
Town of Springerville Municipal	4,472
Tuba City	252
Tucson International	270,100
Valle	4,524
Whiteriver	3,900
Wickenburg Municipal	48,545
Williams Gateway	276,305
Window Rock	7,300
Winslow-Lindbergh Regional	19,345
Yuma Mcas/Yuma International	136,875